AGENDA/KAUPAPA

Te Kaunihera o Te Tairāwhiti
GISBORNE
DISTRICT COUNCIL

P O Box 747, Gisborne, Ph 06 867 2049 Fax 06 867 8076
Email service@gdc.govt.nz Web www.gdc.govt.nz

MEMBERSHIP: Larry Foster (Chair), Colin Alder, Andy Cranston, Debbie Gregory, Ani Pahuru-Huriwai, Rawinia Parata, Aubrey Ria, Tony Robinson, Rob Telfer, Teddy Thompson, Rhonda Tibble, Nick Tupara, Josh Wharehinga and Her Worship the Mayor Rehette Stoltz.

OPERATIONS - INFRASTRUCTURE/NGĀ WHAKAMAHI - TE HANGANGA Committee

DATE: Thursday 18 April 2024

TIME: Following the Operations Environment & Communities Committee

AT: Te Ruma Kaunihera (Council Meeting Room), Awarua, Fitzherbert Street, Gisborne

AGENDA – OPEN SECTION

Operations – Infrastructure

Reports to:	Council
Chairperson:	Cr Larry Foster
Deputy Chairperson:	Cr Teddy Thompson
Membership:	Mayor and all Councillors
Quorum:	Half of the members when the number is even and a majority when the membership is uneven.
Meeting frequency:	Six weekly (or as required).

Functions

- To provide governance oversight of Council's operational programmes, services, activities and projects (including major projects) related to infrastructural assets.
- To enable the progress of the Council's operational activities, projects and services.

Its scope includes:

Infrastructure Services

- Urban Stormwater
- Wastewater
- Water Supply
- Land, Rivers and Coastal
- Local Roading Network – including associated structures, bridges and retaining walls, walkways, footpaths and road reserve, landscaping and ancillary services and facilities, street lighting and traffic management control.
- Solid Waste – including landfill and transfer stations, recycling and waste minimisation.

Terms of Reference

Operational oversight

- Provide governance direction for the Council's operational activities as outlined in the general purposes and scope section.
- Review and adjust relevant working programme priorities within agreed budgets, activity management plans and levels of service as per the Council's Long Term Plan.
- Receive updates on programmes, major projects/projects and activities.
- To have input into, and make decisions on, operational proposals, options and cost of projects/major projects.
- Contribute to the development of short term plans for community services and community facilities.
- Consider the strategic regulatory and compliance issues.
- Prepare submissions on any matter that is within its rationale and terms of reference for Council approval and submit on behalf of Council when timelines do not allow Council prior approval.

Asset Management

- Oversee the management of all Council's physical assets – including land, buildings and roads.
- Make decisions on infrastructure and assets becoming Council's and on infrastructure and community assets on behalf of Council.
- Progress the sale of properties as approved in the Long Term Plan and Annual Plan.
- Contribute to the development of and oversee delivery of economic development projects.
- Consider proposals to change the status or revoke the status of a reserve as defined in the Reserves Act 1977 (including the hearing of submissions).

Power to Act

To make all decisions necessary to fulfil the role and scope of the Committee subject to the limitations imposed.

To establish subcommittees, working parties and forums as required.

To appoint non-voting advisory members (such as tangata whenua representatives) to assist the Committee.

Power to Recommend

To Council and/or any Council committee as it deems appropriate.

3.1. Confirmation of non-confidential Minutes 22 February 2024

MINUTES

Draft & Unconfirmed

Te Kaunihera o Te Tairāwhiti
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MINUTES of the OPERATIONS - INFRASTRUCTURE/NGĀ WHAKAMAHI - TE HANGANGA Committee

Held in Te Ruma Kaunihera (Council Meeting Room), Awarua, Fitzherbert Street, Gisborne on Thursday 22 February 2024 at 9:00AM.

PRESENT:

Her Worship the Mayor Rehette Stoltz, Colin Alder, Andy Cranston, Larry Foster, Debbie Gregory, Ani Pahuru-Huriwai, Rawinia Parata, Aubrey Ria, Tony Robinson, Rob Telfer, Daniel Thompson, Rhonda Tibble & Josh Wharehinga.

IN ATTENDANCE:

Chief Executive Nedine Thatcher Swann, Director Lifelines Tim Barry, Director Liveable Communities Michele Frey, Chief Financial Officer Pauline Foreman, Director Sustainable Futures Jo Noble, Democracy & Support Services Manager Heather Kohn and Committee Secretary Jessica Taylor.

1. Apologies

There were no apologies.

2. Declarations of Interest

There were no interests declared.

3. Confirmation of non-confidential Minutes

3.1 Confirmation of non-confidential Minutes 9 November 2023

MOVED by Cr Stoltz, seconded by Cr Wharehinga

That the Minutes of 9 November 2023 be accepted. **CARRIED**

4. Leave of Absence

There were no leaves of absence.

5. Acknowledgements and Tributes

There were no acknowledgements or tributes.

6. Public Input and Petitions

There were no public input or petitions.

7. Extraordinary Business

There was no extraordinary business.

8. Notices of Motion

There were no notices of motion.

9. Adjourned Business

There was no adjourned business.

10. Reports of the Chief Executive and Staff for INFORMATION

10.1 24-52 Journeys Infrastructure Projects

- Journeys Infrastructure Manager Dave Hadfield presented to the Committee.

MOVED by Cr Gregory, seconded by Cr Ria

> That the Operations - Infrastructure/Ngā Whakamahi - Te Hanganga Committee:
>
> 1. Notes the contents of this report.

CARRIED

10.2 24-55 Water Capital Projects Update

MOVED by Cr Robinson, seconded by Cr Gregory

> That the Operations - Infrastructure/Ngā Whakamahi - Te Hanganga Committee:
>
> 1. Notes the contents of this report.

CARRIED

11. Close of Meeting

There being no further business, the meeting concluded at 12:20 pm.

Larry Foster
CHAIR

3.2. Action Sheet

Meeting Date	Item No.	Item	Status	Action Required	Assignee/s	Action Taken	Due Date
14/09/23	10.1	23-209 Streets for People Grey Street	In progress	Advise Councillors of the reason the designer went with the option they did instead of a roundabout at the Grey Street/Kahutia Street intersection.	Lauriel Edwards	**26/03/2024 Lauriel Edwards** **Raised Central Island:** Raised central islands provide increased safety for people travelling by all modes of transport. These changes remove through-traffic travelling along Kahutia Street, and while some traffic heading east may use Childers Road as an alternative, some people may choose to walk or cycle. This is a result of Kahutia street becoming more pleasant for riding and walking, with reduced vehicle volumes. Less vehicle traffic in and around the Grey Street area will enable a more pleasant, comfortable quieter street environment which will likely enable a wider group of people to enjoy the space. The raised traffic island simplifies the interactions of all modes at the intersection and by removing movements, it reduces several conflicts. The reduction in vehicle movements enables us to install a temporary bi-directional cycle facility on the eastern side that follows the desired line. Safety for people cycling on a bi-directional cycleway is most compromised at side streets and high use driveways. This is due to people in right turning vehicles not able to simultaneously look for a gap in vehicles coming towards them while checking for north and south bound cyclists travelling along the cycleway and watch for pedestrians crossing the area too. The changes to the Grey Street and Kahutia Street intersection are based off crash data. Roundabouts improve safety for car users but does not improve safety for pedestrians and cyclists. A roundabout retains vehicle access in all directions and is unlikely to change traffic volumes moving in and around the space. This makes it harder for modes such as cycling and for pedestrians to navigate the area.	18/10/23

3.3. Governance Work Plan

2024 Operations						Meeting Dates					
HUB	**Activity**	**Name of agenda item**	**Purpose**	**Report type**	**Owner**	**22-Feb**	**18-Apr**	**6-Jun**	**1-Aug**	**12-Sep**	**7-Nov**
Liveable Communities	Liveable Spaces	Community Facilities Strategy Update	To provide an update on the implementation of the Community Facilities Strategy in 2024. as well as the anticipated process and timeframe for review of the document.	Information (I)	De-Arne Sutherland / Tyler Kirk						
Liveable Communities	Liveable Spaces	Notification of Low Impact Temporary Licences to Occupy Reserves	Decision as to whether to notify temporary commercial licences for parks and reserves.	Decision (D)	Chris Visser / Tyler Kirk						
Liveable Communities	Liveable Spaces	Cemetery Planning Update	Overview of current cemetery planning processes	Information (I)	Tyler Kirk						
Liveable Communities	Liveable Spaces	Options for additional temporary outdoor dining in CBD	Assessment of options to create temporary outdoor dining opportunities in the CBD	Decision (D)	Tyler Kirk / Summer Agnew						
Liveable Communities	Liveable Spaces	Indoor Stadium Update	Provide Councillors with an update on the Indoor Stadium Feasibility Study	Information (I)	Jo Haughey / Tyler Kirk						

2024 Operations						Meeting Dates					
HUB	**Activity**	**Name of agenda item**	**Purpose**	**Report type**	**Owner**	**22-Feb**	**18-Apr**	**6-Jun**	**1-Aug**	**12-Sep**	**7-Nov**
Liveable Communities	Liveable Spaces	Public Conveniences Network Planning Update	Overview of the Public Conveniences Network Study, and the intended approach within the Three-Year Plan	Information (I)	Angela Newman / Tyler Kirk						
Liveable Communities	Liveable Spaces	S17a Local Government Act Review of the Parks and Amenities Maintenance Contracts.	To update the Committee on the findings of the recent review of Council's Open Space and Maintenance Service Delivery Contracts. Public Excluded	Information (I)	De-Arne Sutherland						
Liveable Communities	Community Projects	Waingake Transformation Programme Update	Providing the Committee with an update on the Waingake Transformation Programme and associated activities including a financial update.	Information (I)	Amy England						
Sustainable Futures	Strategic Planning	Water Security Programme Workshop	Workshop on water security programme and water quantity planning provisions.	Workshop	Sarah Thompson						

2024 Operations						Meeting Dates					
HUB	**Activity**	**Name of agenda item**	**Purpose**	**Report type**	**Owner**	**22-Feb**	**18-Apr**	**6-Jun**	**1-Aug**	**12-Sep**	**7-Nov**
Finance & Affordability	Financial Services	Community Housing Management Plan Update	Provide an update on GHL including cost of community housing	Decision (D)	Ally Campbell						
Liveable Communities	Community Projects	Learn to Swim Operation Kiwa Pools Six Monthly Review	Update	Information (I)	Campbell Macgregor						
Liveable Communities	Community Projects	Kiwa Pools Operations - Six Month's Operation Review	Update	Information (I)	Campbell Macgregor						
Liveable Communities	Liveable Spaces	Public Excluded Liveable Spaces Maintenance Contract Procurement Plan	Update the Operations Committee on the findings of a recent review of Council's open space and maintenance service delivery contracts under s17a Local Government Act.	Decision (D)	De-Arne Sutherland						
Office of the Chief Executive		Endorsement of in-principle support	EXTRAORDINARY Confirmation of commitment in principle to iwi position on Maori Wards, Fast Track Consenting, TMOTW	Decision (D)	Jade Lister-Baty						

2024 Operations						Meeting Dates					
HUB	**Activity**	**Name of agenda item**	**Purpose**	**Report type**	**Owner**	**22-Feb**	**18-Apr**	**6-Jun**	**1-Aug**	**12-Sep**	**7-Nov**
Liveable Communities	Integrated Catchments	Update on the Natural Heritage Fund Assessment Process Review	Update	Information (I)	Melanie Cheetham						
Liveable Communities		Regional Biodiversity update	Update on the formation of the Regional Biodiversity Transformation Team	Information (I)	Amy England						

10. Reports of the Chief Executive and Staff for INFORMATION

Te Kaunihera o Te Tairāwhiti
GISBORNE
DISTRICT COUNCIL

24-87

Title:	**24-87 3 Waters Infrastructure Projects Update**
Section:	Water Manager
Prepared by:	Leo Kelso - Water Manager
Meeting Date:	Thursday 18 April 2024

Legal: No	Financial: Yes	Significance: **Low**

Report to OPERATIONS - INFRASTRUCTURE/NGĀ WHAKAMAHI - TE HANGANGA Committee for information

PURPOSE - TE TAKE

The purpose of this report is to provide a high-level progress update on 3 Waters infrastructure projects for the 2023/2024 budget year.

SUMMARY – HE WHAKARĀPOPOTOTANGA

The report provides a status update on the following infrastructure projects:

Water Supply

- Watermain renewals - 2023/2024 programme underway and on track to be completed by the end of the budget year.
- Reinstate Waingake projects post Cyclone Gabrielle - surface protection work on one of the Waingake pipeline bridges is underway and is on track to be completed in March 2024.
- Waingake trunk main span refurbishment - work set to commence on a 250-metre section of pipeline in April 2024 and targeted to be completed by June 2024.
- Waingake Treatment Plant UV - installation and commissioning of the UV treatment facility to meet regulatory requirements for treatment assurance and compliance have been completed.
- Residential backflow prevention - 2023/24 programme has been completed.
- Te Karaka reticulation - work has been scoped and the contractor procured. Timing of construction will depend on when it is right for the community and in balance with other recovery and community programmes.
- Water supply upgrades - southern Taruheru watermain extension project concept design completed, and the final design is in process. Procurement and construction will follow final design approval June/July 2024.

Wastewater

- Construction of the Stage 2 Upgrade of the Wastewater Treatment Plant is finished, and the new plant is now operational. The hot commissioning and optimisation of the main equipment is underway. If everything continues smoothly, we will transition to trial operations and compliance testing in May.
- Wastewater pipeline renewals - the 2033/2024 programme on track to be completed by the end of April 2024.
- Oakview/Back Ormond Road Pump Station - project to increase capacity to service area development completed, commissioned, and operational February 2024.
- Wastewater pump station renewals – new pumps were bought for the Dunstan Road pump station. The replacement is planned to be completed before mid-2024, pending a suitable timeframe agreed upon with affected businesses in the area.

Stormwater

- Stormwater renewals - two renewal projects completed to date, planning underway for actioning work on additional projects.
- Public Drains on Private Property (PDPP) - multiple projects in various stages of progress that will commit the available 2023/2024 budget.
- Whataupoko stormwater - consultant procurement has begun and will be focused on the investigation and design of stormwater infrastructure to reduce the frequency and severity of flooding in the Whataupoko and Mangapapa areas. The design and investigation in 23/24 will be followed by construction programmes in 2024/2025 & 2025/2026 budget years.
- Douglas Street stormwater improvement project - work underway and project on track to be completed by March end 2024.

The decisions or matters in this report are considered to be of **Low** significance in accordance with the Council's Significance and Engagement Policy.

RECOMMENDATIONS - NGĀ TŪTOHUNGA

That the Operations - Infrastructure/Ngā Whakamahi - Te Hanganga Committee:

1. Notes the contents of this report.

Authorised by:

Tim Barry - Director Lifelines

Keywords: infrastructure projects, 3 waters infrastructure project, water supply, wastewater, stormwater, watermain renewals, waingake project post cyclone gabrielle, bqckflow prevention, te karaka reticulation, wastewater treatment plant, back Ormond road pump station,

BACKGROUND - HE WHAKAMĀRAMA

1. This report provides a summary account on the Council's water supply, wastewater, and stormwater infrastructure programmes for the financial year to the end of February 2024.

DISCUSSION and OPTIONS - WHAKAWHITINGA KŌRERO me ngā KŌWHIRINGA

Water Supply

Watermain Renewals 2023/2024

2. A programme focused on the progressive renewal of water mains which have reached the end of their economic life.
3. The contracted areas for the 2023/24 programme are Munro Street, Andrew Street, Puriri Street, Birrell Street, Howarth Street, and Oswald Street. The contractor has completed pipe drilling and installation of 125mm PE pipe in Munro, Andrew, Birrell and Oswald streets.
4. Allocated budget is $755k of $1.15m, work is underway on additional projects to allocate the balance of the remaining budget.

Year to date	Balance Committed	Budget	Remaining
$180k	$575k	$1.15m	$395k

Pipe drilling in Andrew Street

Redmond/Andrew streets intersection showing 125mm pipe crossing

Reinstate Waingake Projects Post Cyclone Gabrielle

5. This budget line incorporates multiple recovery projects for the Waingake Treatment Plant and raw and treatment water pipelines, which includes pipeline repairs, pipeline and dam road reinstatement, and pipeline bridge repairs.
6. One key project involves critical surface protection work following damage from Cyclone Gabrielle on the pipeline bridge near Waingake Road, which sits along Waingake School.
7. The cost for reinstating Waingake work is being addressed through a claim filed with NEMA/Insurance.

PB 4 looking downstream, pipe wrap (Waingake School)

Looking upstream

Year to date	Balance Committed	Total Spend	Remaining
$989k	$534k	$1.523m	$0

Waingake – Trunk Main Span Refurbishment

8. The refurbishment of 250m of above-ground trunk main involves protecting the pipe surface. This project includes cleaning the pipe surface, installing gibault covers, and applying new surface protection. Procurement has been completed and the contractor will start in April 2024.

Year to date	Balance Committed	Budget	Remaining
$10k	$390k	$400k	$0

Waingake trunk main – trial/test refurbished section

Waingake Treatment Plant UV

9. Installation and commissioning of a UV treatment facility at the Waingake Water Treatment Plant to meet regulatory changes for treatment assurance and compliance beyond Waingake Water Treatment Plant performance.

10. Spend is $28k over for the original full project budget of $1.232m, or 2.3%, which resulted from additional onsite costs relating to challenging site conditions during construction in 2023. Waingake plant upgrade budget will be used to cover the overspend.

Year to date	Balance Committed	Budget	Remaining
$314k	$0k	$285k	$-28k

Waingake UV plant, installed, commissioned, and operational

Residential Backflow Prevention

11. This programme aims to progressively install backflow prevention to meet regulatory requirements for the water supply network. It includes replacing the existing toby with meter connection points. Additionally, the programme also accounts for reactive work on water tobies, using fault repairs as an opportunity to install backflow prevention.

12. So far, a total of 9,560 backflow preventers have been installed in this multi-year programme out of a total target of 16,563 (57%).

13. The 2023/2024 budget has been overspent due to the impact of reactive repair work, focus is now on developing a programme for 2024/25. Unspent budget from previous years for backflow prevention will be used for the overspend.

Year to date	Balance Committed	Budget	Remaining
$418k	$0	$398k	$-20k

Te Karaka Reticulation

14. Te Karaka urban area is serviced by a low-pressure, on-demand trickle feed water scheme into private rainwater tanks. The project involves upgrading the reticulation network and installing a backflow prevention system.
15. The project has been delayed due to the significant impact of Cyclone Gabrielle on Te Karaka and the community. The programme will be actioned when the timing aligns with community needs and other recovery and community programmes.

Year to date	Balance Committed	Budget	Remaining
$1.9k	$699.1k	$701k	$0

Water Supply Upgrades - Southern Taruheru Watermain Extension

16. This infrastructure acceleration funded project provides a level of service (LOS) for growth in housing in the Back Ormond, Nelson Road, and Cameron Road areas.
17. The concept design has been completed and the final design is currently underway. Procurement and construction will follow once the final design approval is obtained.

Year to date	Balance Committed	Budget	Remaining
$93k	$690k	$783k	$0

Wastewater

Wastewater Treatment Plant – Stage 2 Upgrade

18. A major project is underway to improve wastewater treatment including clarification, filtration, ultraviolet disinfection, and solids removal after stage 1's screening and biological trickle filter treatment.
19. Civil works and cold commissioning of the plant has been completed. We are in the final stages of the plants hot commissioning and optimisation programme. If progress continues as planned, we anticipate transitioning to trial operations and compliance testing in May 2024.
20. The project budget is currently forecast to end $560k over (1.6%), which has been due to the additional time required to complete commissioning and optimise plant, with a focus on achieving design performance and meeting compliance targets. Funding has been allocated to cover the overspend.

Year to date	Balance Committed	Budget	Remaining
$34.8k	$-360k	$34.6k	$-560k (1.6%)

Wastewater Treatment Plant – Stage 2 Upgrade

Wastewater Pipeline Renewals

21. Part of the DrainWise programme to renew wastewater pipes and reduce stormwater infiltration. Prioritisation is based on analysing critical risks such as pipe age, consequences of failure, and likelihood of failure.
22. The 2022/23 programme, delayed by the impacts of Cyclone Gabrielle and conditions experienced, was completed in November 2023.
23. The 2023/24 programme began in December and is on track to be completed by March 2024. It included main and lateral lining in Iranui Road, and CCTV footage of private laterals to enable a condition assessment of some of our district's older private lateral pipes.
24. Preliminary work has started on the 2024/25 programme, subject to final budget confirmation.

Year to date	Balance Committed	Budget	Remaining
$2.065m	$361k	$2.426m	$0

Oakview/Back Ormond Road Pump Station

25. An infrastructure acceleration funded project aimed to upgrade the wastewater pump station on Back Ormond Road, which will service the new Oakview development.
26. The project is completed, commissioned, and operational.

Year to date	Balance Committed	Budget	Remaining
$407k	$7k	$430k	$16k

Back Ormond Rd pump station

Wastewater Pump Station Renewals

27. A critical infrastructure renewal programme to ensure pump stations and telemetry systems are maintained and optimised for network performance.

28. Pumps have been purchased for the Dunstan Road pump station to replace the old units. The replacement is planned to be completed before mid-2024, pending a suitable timeframe agreed upon with affected businesses in the area.

Year to date	Balance Committed	Budget	Remaining
$130k	$168k	$298k	$0

Stormwater

Stormwater Renewals

29. A DrainWise programme aimed to renew stormwater pipes to improve network performance. Priority is determined based on critical risk analysis of factors such as pipe age, capacity, consequence of failure, and likelihood of failure.

30. Projects completed include 158A Stout Street as well as Disraeli/Childers Road stormwater channel (archway) lining. Project planning is underway for additional stormwater lining work.

Year to date	Balance Committed	Budget	Remaining
$281k	$92k	$448k	$75k

Childers Road / Disraeli Street brick stormwater channel

Public Drains on Private Property (PDPP)

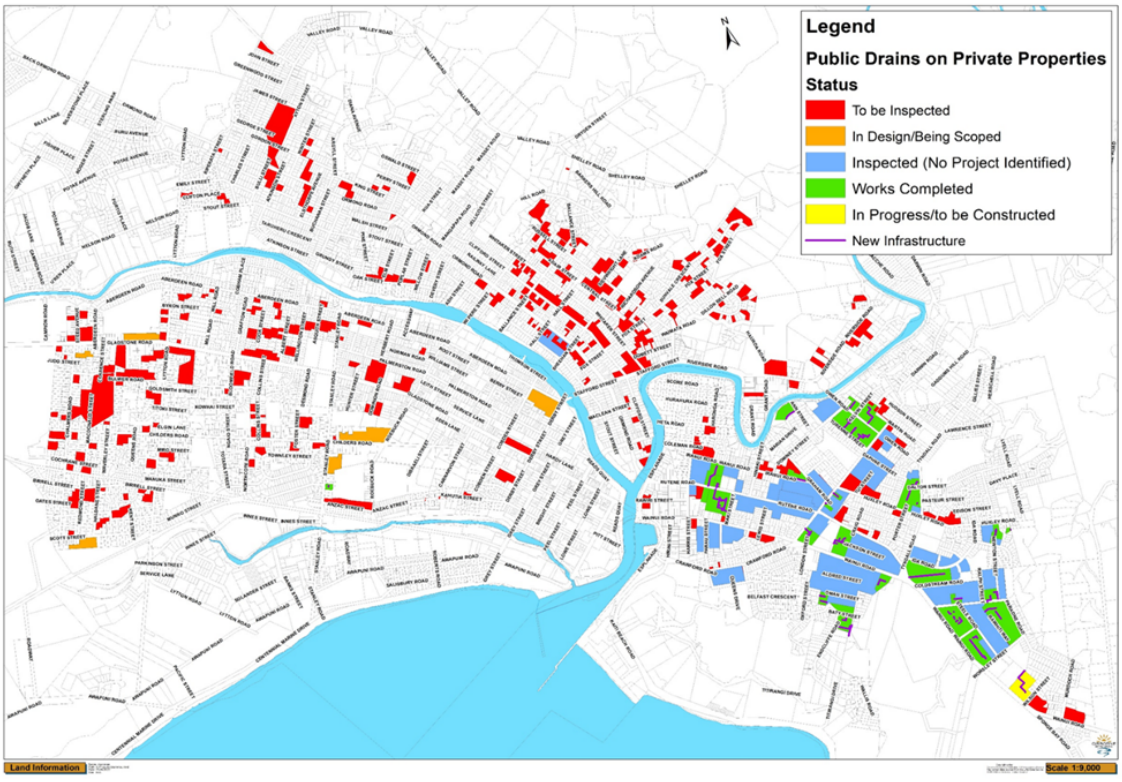
31. Apart of the DrainWise programme to redirect major private property flooding from entering the wastewater network by redirecting flow to the stormwater network through public drains installed on private property.

32. Ida/Coldstream roads project has been completed. 608-610 Wainui Road PDPP project design completed, property-owners approval given, resource consent progressing. 818 Gladstone Road, preliminary plan completed and design process underway. Harry Barker Reserve and Scott Street projects concept plans completed, now moving to design stage.

33. Since the start of the DrainWise programme 34 PDPP projects have been completed to date, six projects are in the scope, design, or resource consent phase. The map below illustrates the areas that have been investigated but not translated into projects (light blue) and those areas that will be investigated to inform if a PDPP is required (red).

34. Given the current projects, it is expected that the budget will be fully spent or committed by the end of the 2023/24 financial year.

Year to date	Balance Committed	Budget	Remaining
$202k	$631k	$833k	$0



Map of PDPP projects and investigations

Whataupoko Stormwater

35. This multi-year project aims to improve stormwater management in Whataupoko. The 2023/24 budget has been allocated to investigation and design work to inform the construction projects for 2024/25 and the 2025/26 budget years.
36. Stormwater modelling has identified several areas within the Whataupoko and Mangapapa area where the existing public stormwater network is not able to meet levels of service.
37. Consultant procurement has been actioned for the project to design stormwater infrastructure to reduce the frequency and severity of flooding in the Whataupoko and Mangapapa areas. Design scope will include investigations, concept design/optioneering, detailed design, cost estimates, and preparation of tender documents.

Year to date	Balance Committed	Budget	Remaining
$0	106k	$106k	$0k

Douglas Street Stormwater Improvement Project

38. New stormwater infrastructure is planned for Douglas and Frances streets to improve stormwater management in this area.
39. A contract was awarded on 7 December 2022. However, due to Cyclone Gabrielle and the need to relocate some Chorus fibre ducts before laying pipes in Douglas Street, the work could not be completed within that financial year. Contract work could resume in January 2024 and is expected to be completed by end of March 2024.
40. Because of the necessity to relocate fibre ducts and additional site work, the project is projected to end $75k over budget. The unallocated stormwater renewals budget will offset this overspend.

Year to date	Balance Committed	Budget	Remaining
$198k	$327k	$450k	$-75k

Douglas/ Frances Street stormwater pipe crossing looking north

Stormwater connection

ASSESSMENT of SIGNIFICANCE - AROTAKENGA o NGĀ HIRANGA

Consideration of consistency with and impact on the Regional Land Transport Plan and its implementation
This Report: **Low** Significance

Impacts on Council's delivery of its Financial Strategy and Long Term Plan
This Report: **Low** Significance

Inconsistency with Council's current strategy and policy
This Report: **Low** Significance

The effects on all or a large part of the Gisborne district
This Report: **Low** Significance

The effects on individuals or specific communities
This Report: **Low** Significance

The level or history of public interest in the matter or issue
This Report: **Low** Significance

41. The decisions or matters in this report are considered to be of **Low** significance in accordance with Council's Significance and Engagement Policy.

TANGATA WHENUA/MĀORI ENGAGEMENT - TŪTAKITANGA TANGATA WHENUA

42. The activities reported are a mix of Council's Long Term Plan and Cyclone Gabrielle recovery projects. Engagement is ongoing on the following projects:

    - The Wastewater Treatment Plant Stage 2 Upgrade and the DrainWise programme are engaged through the Wastewater Management Committee and the KIWA Group as governed by the Wastewater outfall discharge consent, and dry weather and wet weather discharge consents.
    - DrainWise - Public Drains on Private Property (PDPP) projects are engaged on a case by-case basis. Ngāti Oneone have been consulted on the Wainui Road PDPP, including onsite meetings. Engagement is pending for the Scott Street PDPP.

COMMUNITY ENGAGEMENT - TŪTAKITANGA HAPORI

43. The community has been consulted as part of the 2021-2031 Long Term Plan (LTP) process.

CLIMATE CHANGE – Impacts / Implications - NGĀ REREKĒTANGA ĀHUARANGI – ngā whakaaweawe / ngā ritenga

44. Rising sea levels and higher intensity rainfalls will impact the performance of the stormwater network. Any new or renewal works have adopted 2090 climate change levels.

CONSIDERATIONS - HEI WHAKAARO

Financial/Budget

45. Financials are discussed above (paragraph 2 – 40).

Legal

46. Wastewater treatment plant stage 2 upgrade is to meet compliance with the outfall discharge consent. The Drainwise programme has been actioned to meet compliance requirements for the dry weather overflow discharge consent, and wet weather overflow discharge consent.

POLICY and PLANNING IMPLICATIONS - KAUPAPA HERE me ngā RITENGA WHAKAMAHERE

47. There are no policy and planning implications for this report.

RISKS - NGĀ TŪRARU

48. Not complying with existing wastewater discharge consents.
49. Failing to meet community expectations on reducing wastewater overflows can negatively affect Council's reputation.
50. Property and river overflows present health and environmental risks.

NEXT STEPS - NGĀ MAHI E WHAI AKE

Date	Action/Milestone	Comments
6 June 2024	Operations Infrastructure Committee report	Submit project(s) update
30 June 2024	Complete Drinking water, Stormwater, Wastewater infrastructure work programmes	Target completion on time, on quality, and in budget, minimise carry over projects / budget

Te Kaunihera o Te Tairāwhiti
GISBORNE
DISTRICT COUNCIL

Title: **24-109 Journeys Infrastructure Projects**

Section: Journeys Operations & Infrastructure

Prepared by: Dave Hadfield - Journeys Infrastructure Manager

Meeting Date: Thursday 18 April 2024

Legal: Yes	Financial: Yes	Significance: **Medium**

Report to OPERATIONS - INFRASTRUCTURE/NGĀ WHAKAMAHI - TE HANGANGA Committee for information

PURPOSE - TE TAKE

The purpose of this report is to provide an update to the Committee about the land transport activities which include both operational and infrastructure projects.

SUMMARY – HE WHAKARĀPOPOTOTANGA

The report provides a status update on the land transport activities and will discuss projects listed in the current Long-Term Plan e.g. East Cape Road, 1000–year walkway bridge, speed management, roading rebuild programme for sealed and unsealed roads. There is a section on the operational aspects including a review of traffic management practices and reports from the respective maintenance areas.

An update on the roading recovery projects which includes large woody debris, bridge rebuild programme, bridge repair programme, Tiniroto Road, roadside drainage programme and the network roading review. The recovery projects will be reported separately to Council, so they will be just highted in this report.

The Journeys team is still operating in a response phase, NZTA have now approved a total of $81.3m, (100% government funded) to date we have spent $80.1m. In April we have received a further $11.3m to be spent by June 30. Staff are working collaboratively with NZTA to build our recovery programme of works; the target date for completing this work is the end of May 2024.

The decisions or matters in this report are considered to be of **Medium** significance in accordance with the Council's Significance and Engagement Policy.

RECOMMENDATIONS - NGĀ TŪTOHUNGA

That the Operations - Infrastructure/Ngā Whakamahi - Te Hanganga Committee:

1. Notes the contents of this report.

Authorised by:

Tim Barry - Director Lifelines

Keywords: East Cape Road, Roading Rebuild programme, 1000-year Bridge, Large Woody Debris, Bridge Rebuild Programme, Bridge Repair Programme, Tiniroto Road, Roadside Drainage Programme, Network roading review

BACKGROUND - HE WHAKAMĀRAMA

1. This report provides a summary account on the Council's land transport activities. This report covers progress with Long Term Plan (LTP) and externally funded projects.

DISCUSSION and OPTIONS - WHAKAWHITINGA KŌRERO me ngā KŌWHIRINGA

STATUS OF THE NETWORK

2. There are 17 road restrictions on the network, the main roads are Tauwhareparae, Wharekopae, Matahiia and Tiniroto. The rest are due to lost access, destroyed bridges or bridges that have weight restrictions. An update on the bridges is discussed in the report.

TRAFFIC MANAGEMENT

3. The Government Policy Statement for Land Transport has directed a review of traffic management practices. Feedback from Whanganui District Council shows they have managed to reduce these costs by using full road closures. Our projects will start implementing this with the rollout of new infrastructure contracts.

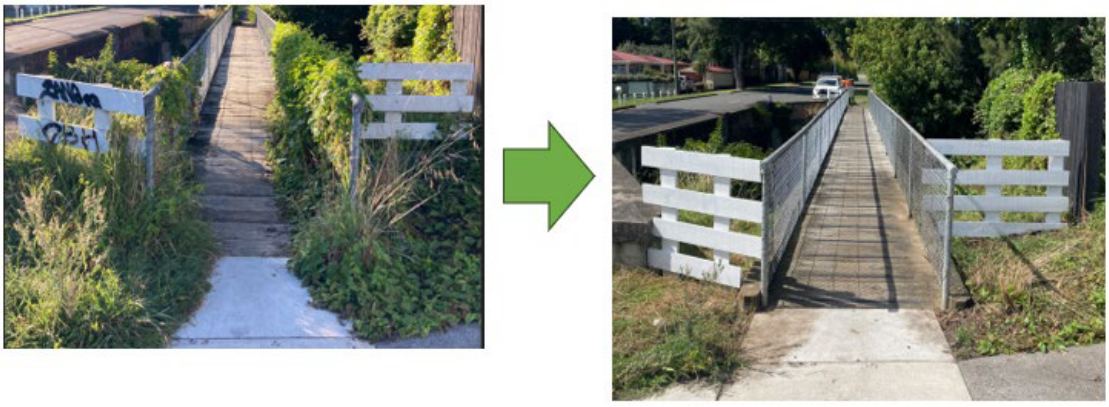
UAWA CONTRACT

4 Highlight for the month was the completion of urgent bridge repairs at Mangehia Bridge #4 along Tauwhareparae Road.

5. Other works include grading 256km of roads, and cleaning and jetting 198 culverts and heavy metalling on Takapau Road.

WAIPAOA and TURANGA CONTRACTS

6. There is still a focus on cyclone repairs like this major culvert washout on Rakauroa Road. Crews still are undertaking maintenance activities for instance 766 pothole repairs were completed, major dig outs on Tiniroto Road and footbridge maintenance activities.



7. This month our contractors had an increase in anti-social behaviour. The teams were responding to events such as the library protest, numerous calls to the Palmerston/Derby Street project to replace traffic management and extensive clean up after boy racer events. The downside is our contractors must reprioritise planned work to these unplanned events.

PROGRESS OF EMERGENCY WORKS APPLICATIONS

8. There is a significant work programme, but Journeys collective focus is to complete the Gabrielle response as this is 100% funded. All work not completed by then will reduce to Councils normal emergency subsidy rate of 88%.

Event	Subsidy Rate	$ Total	$ Spend	Status	Comments
June 2020	86	1,883,382	27,232	Application approved	Final project at tender phase.
June 2021	86	3,064,500	909.100	Application approved	Projects in design phase
November 2021	86	724,190	0	Application approved	Project to be tendered in April
March 2022	66	2,791,347	133.835	Application approved	Projects tendered but placed on hold as some were impacted by Gabrielle.
Gabrielle response	100	81,383.683	80,162,825	Application approved	
Gabrelle response	100	11,037,750	0	Application under review by NZTA	
Gabrielle recovery	86	1,498,980	0	Application approved	
Gabrielle recovery	86	2,662,130	0	Application to be submitted	
Tiniroto Landslide	86	1.143,218	607,760	Application approved	All work completed this will be claimed in May 2024.
June 2023 Initial response	86	6,022,481	0	Application approved	All work completed this will be claimed in April 2024.
June 2023 Recovery	86	7,510,000	0	Application to be submitted	Data being reviewed.
November 2023	86	1.800,000	0	Application to be submitted	Data review complete.
Total		**121,521,661**	**81,840,752**		

9. Staff are working on a Gabrille recovery application which will be split into two phases:
    - Short term recovery – a programme of works that can be delivered over 12-18 months.
    - Long term recovery – 18 months and beyond, due to value of the repairs $400m and will be dependent on the outcomes of the GPS – Land Transport (which we have received) and more importantly the 2024 Budget which will provide an indication how much funding will be allocated to the Cyclone Gabrielle recovery. This will be dependent on the strategic review of the Council network.

Strategic network review

10. NZTA have approved an initial $150k for Council to review its 1900km network. Often reviews are seen in a negative light, but it is also an opportunity to focus on our future transport system so it can provide economic and social benefits that people expect.
11. The first piece of work is gathering all the information that Council has already consulted with the community on, like the Regional Land Transport Strategy, Future Development Strategy, Tairāwhiti Regional Spatial Plan, and community-led Recovery Plans are examples and starting to overlay this information over our existing roading network. This is an extensive piece of work, and the project team is targeting a completion date of April 2025.
12. It is important the project scope is confirmed which also confirms exclusions:
    - This is not a state highway network review.
    - The review excludes how our existing roading contracts are procured or delivered.
13. One of the outcomes is that this will be used as a prioritisation tool for our long-term Cyclone Gabrielle recovery.

PASSENGER TRANPORT

14. Morrison Low Consultants have just completed a Section 17a review of Councils existing bus contracts. This review is mandatory. The purpose is to ensure Council confirms what it is going to procure to the market. The recommendation was for an enhanced status quo service delivery.
15. We have seen increased patronage on the Waka Kura service because of concession discounts implemented last year, but due to funding cuts from the new government, some of these discounts will end by 1 May 2024.
16. Whether this will impact the patronage levels of Waka Kura or not is unknown. The National Ticketing Solution (NTS) is about to kickstart in Canterbury later this year, Gisborne is scheduled for 2026.
17. A new bus shelter is being proposed for 310 Ormond Road (Mangapapa Church) before the end of June.

TOTAL MOBILITY

18. Total Mobility (subsidized taxi fees) patronage and costs have increased substantially since COVID hit. This is a nationwide impact. NZTA are undertaking a Total Mobility Research study to determine why these increases are happening.

19. A high-level description of progress is **Attachment 1**, but project specific comments are detailed below.

2021-2024 LONG TERM PLAN PROJECTS

East Cape Road

20. This was the last remaining project funded as part of the Government's response package to a value of $4.5m. Excellent weather conditions continue allowing the contractor to make good progress. Budget and completion timeframes are on target.

1000-Year Bridge

21. A storytelling project that highlights our region's first arrivals and great navigators with a project cost of $1.8m. The underground infrastructure to support the waka is completed.

22. Since the last report contractors have confirmed they will restart the project at the end of May, minor tree works will occur beforehand to remove Pohutukawa limbs in the way of the bridge alignment.

Roading Rebuild Programme for the Sealed and Unsealed Network

23. Contractors are progressing nicely through their work programme and if favourable weather conditions continue, it is forecast that the work programme will be finished by April. The resealing programme has tar sealed 38km so far with 12km left. Our contractors just need five days of continuous fine weather to complete the programme.

24. An additional project was included in the sealed road rehabilitation contract. The intersection of Back Ormond Road and Hansen Road will be upgraded as part of the Government's Infrastructure Accelerated Fund to improve access to Hansen Road and the new Oakview subdivision. The scope of works includes a right turn lane from Back Ormond Road to Hansen Road for city bound traffic and improved drainage. Our funding agreement has set a delivery date of 30 June for this project to be completed.

25. The 200m section of Tiniroto Road that was impacted by the landslide in October 2023 has now been resealed.

26. Staff are trialling a roading product called Fibredec, this provides a chipseal surface with fibreglass strands laid in between the layers of emulsion which will mitigate cracking. The product stops rainwater falling into cracks causing an earlier deterioration of the road. The trials will be on Iranui Road and Clifford Street.

27. The total budget for the combined programme is $15.4m (bridges are now included) and our finances show a 90% completion rate. The next 3 months will be focussed on landing on this budget line.

SPEED MANAGEMENT

28. The next rollout of speed reduction will take place in the following townships. These will be reduced to 40 kph:
    - Ormond, Manutuke, Te Karaka, Whatatutu, Stout Street.
    - CBD – This will be reduced to 30kmh.
29. The following schools will be reduced to 30kmh:
    - Gisborne Intermediate.
    - Illmininister/Te Wharau.
    - Waikirikiri.
    - Tiniroto.
    - Te Karaka School.
30. This programme of work will need to be completed by 30 June; any future projects will be dependent on our 3-year funding bid to NZTA. The budget allocated to this project is $300,000.

ROAD TO ZERO PROJECTS

31. The safety improvements of Palmerston and Derby intersection is underway, with a goal of improved pedestrian access at this site. The scope of work includes kerb repairs and removal of existing pedestrian crossing points and installation of new raised pedestrian crossings and islands.

32. The cost of the project is $380,000k and is programmed to be finished by the end of May.

WALKING and CYCLING

33. Once the Palmerston/Derby intersection is completed, contractors will install a footpath following the Taruheru River beside Mitre 10. This 70m section will replace the existing metalled pathway and will cost $86,000.

ASSET DATA MANAGEMENT STANDARD

34. Roading data across NZ can be inconsistent and difficult to benchmark therefore NZTA is assisting Councils with the introduction of a new Asset Management Data Standard (AMDS). This will clean, add, and update our existing asset database, update information tables and categories into a separate portal and then overwrite our existing roading asset management system.

35. The advantages of AMDS are more accurate benchmarking across Councils regarding roading network performance. The cost to implement this will be in the order of $300-450,000 over the next 36 months. This will be offset by NZTA taking over the annual data surveys costs of $50-80k per annum. This is a Department of Internal Affairs requirement from 1 July 2024.

INVESTMENT (EMERGENCY WORKS AUDIT)

36. A NZTA audit has been completed on Councils $68m emergency works expenditure in response to weather events in January and February 2023.

37. To assist with the initial response the Waka Kotahi Board approved a time limited special funding assistance rate (FAR) of normal FAR plus 40% to a maximum of 100% for Gisborne District Council. Improvements are suggested but overall, with the volume of work completed this is a satisfactory report.

38. The close out notes are **attached** but the full audit will be tabled at the next Audit & Risk Committee.

RECOVERY PROJECTS

Large woody debris

39. The latest district data is tabled below from 3 April:

Catchment	Extracted from waterways (tonnes)	Stockpiled awaiting treatment (tonnes)	Burnt (tonnes)	Chipped or repurposed (tonnes)
Te Arai	65,757	24,533	41,224	30
Waimata	46,089	19,448	26,641	0
Hikuwai	90,579	42,951	47,449	0
Waiapu	59,300	0	59,300	0
Whatatutu	12,146	6583	5563	0
Beaches	32,923	15,232	16,191	13,044
Total	**306,794**	**108,747**	**196,368**	**13,074**

40. Over the next three months the focus areas will be the Te Arai catchment to remove large woody debris (LWD) material that could place the city pipeline at risk. Currently five sites along the Te Arai have been awarded, contractors and staff understand the importance of this piece of work. Secondly, there is still a fair amount of finishing required at some of the district beaches, especially around Tolaga Bay and Waikanae and Midway. Resources will be relocated to these areas.

41. For the Committee's information, Project Operation Plans are required before any work can commence. Refer to **Attachment 2**. Once a contract has been awarded, the contract status is monitored by drone surveys, refer to **Attachment 3**.

42. The single biggest risk with this project is the tight delivery timeframe to complete the work by 30 June 2024. It is more likely that contracts will be awarded but the work will be completed after this date.

Bridge Rebuild Programme

43. There is little to update the Committee with this project. Bridge designers are still on track to complete the first bridge design (St Ledgers) by the end of May. Staff are working through the consent process with favourable discussions with iwi and the community.

44. To obtain NZTA funding for bridge replacements we must go through a special procedures process with the goal of getting a positive benefit cost ratio of 1.0. As some of our bridges have low traffic volumes, we have little option to move into full procedures which incorporates land use beyond the bridge.

Bridge Repair Programme

45. Fifty-two bridges require major structural repairs before additional storms deteriorate onsite conditions with further loss of connection to communities. Designs for 17 bridges are ready for tender. A group of eight local contractors who have recently been awarded Council bridge repair contracts have been invited to be part of our panel. These contractors have been asked to resubmit their attributes including updated staff profiles and current resourcing commitments over the next month.

46. The procurement phase will be completed by the April.

Tiniroto Road

47. Professional service providers LDE and WSP have provided an updated report to reopen the Hangaroa Bluffs. Staff are working with the project team to establish a cost to safely reopen the Bluffs. Due to the interdependencies between the short-term reopening currently led by Journeys, and the long term overall Tiniroto Project, the reopening phase has been transferred to the Tiniroto Project team. Refer to **Attachments 3** and **4** for a copy of the report and additional information.

Roadside Drainage Programme

48. The scope of this $27m CIP project has been defined and it will be targeted at providing greater resilience on Mata-Ihungia Roads as an alternative to SH35 and Te Wera and Wharekopae Roads as an alternative SH2 route.

49. Progress on the project has stalled as the Journeys team are focusing on Cyclone Gabrille delivery.

50. Additional resources will be required to restart this project.

Slips and Dropouts

51. NZTA have approved in principle $11.3m specially targeting slips and dropout repairs and additional bridge work. This will be used to install bailey bridges on Tauwhareparae and Makarika Roads. Mangaheia Bridge #4 was installed in March.

ASSESSMENT of SIGNIFICANCE - AROTAKENGA o NGĀ HIRANGA

52. This report is part of a process to arrive at a decision that will/may be of **Medium** significance level in accordance with the Council's Significance and Engagement Policy

TANGATA WHENUA/MĀORI ENGAGEMENT - TŪTAKITANGA TANGATA WHENUA

53. Site specific issues have been informative discussions rather than consultative. But as project scopes become defined partnership discussions can begin.

COMMUNITY ENGAGEMENT - TŪTAKITANGA HAPORI

54. Site specific issues have been informative discussions rather than consultative. But as project scopes become defined targeted community discussions can begin.

CLIMATE CHANGE – Impacts / Implications - NGĀ REREKĒTANGA ĀHUARANGI – ngā whakaaweawe / ngā ritenga

55. The impact of climate change is being considered in construction design to provide resilience opportunities.

CONSIDERATIONS - HEI WHAKAARO

Financial/Budget

56. There are several government funding providers and so it is critical that project managers are using the correct job codes to mitigate any future audit issues.

Legal

57. We have used external legal support to review contract documents before procuring these to the market. This is to resolve the risk that in the pace of putting contract documents to tender, we need to keep updated with any changes in contract law.

POLICY and PLANNING IMPLICATIONS - KAUPAPA HERE me ngā RITENGA WHAKAMAHERE

58. Not applicable at this time but there will be a linkage with the 2024-2027 Three-year Plan and the 2024-2027 Regional Land Transport Plan.

RISKS - NGĀ TŪRARU

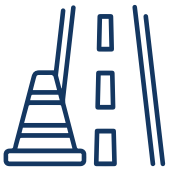
59. Each project has specific risks that need to be addressed. Many of the projects are still in the investigation phase and will become more certain as the projects develop.

ATTACHMENTS - NGĀ TĀPIRITANGA

1. Attachment 1 - Gisborne District Council Roading Infrastructure Projects - March 2024 [**24-109.1** - 1 page]
2. Attachment 2 - 540016 - 017 PDP Ti Kapa [**24-109.2** - 10 pages]
3. Attachment 3 - 19442- GE O- Assessment Report- Hangaroa Bluffs - February 2024-431640-ISSUE D-2024.03.13 13.32.00 [**24-109.3** - 34 pages]
4. Attachment 4 - 19442- Analysis Output- Appendix C - Feb 24-436970- ISSUE D-2024.03.20 08.47.00 [**24-109.4** - 2 pages]
5. Attachment 5 - Gisborne District Council - Makarika LWD Debris [**24-109.5** - 2 pages]
6. Attachment 6 - Gisborne District Council EW Close out Notes 2023 [**24-109.6** - 8 pages]

Te Kaunihera o Te Tairāwhiti
GISBORNE DISTRICT COUNCIL

ROADING INFRASTRUCTURE PROJECTS MARCH UPDATE




East Cape Road (PGF)

Problem: Part of Governments COVID response package.

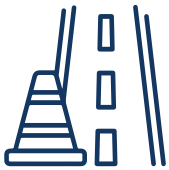
Solution: Rock protection works.

Outcome: Reduce road closures and build engineering capacity.

Completion Date: August 2024

Cost: $4.5m

Risk: Environmental




Reseals, Rehabs, Drainage, Bridges & Heavy Metalling

Problem: Continued asset deterioration and levels of service.

Solution: Complete annual plan capital programme.

Outcome: Slow down deterioration levels and reduce maintenance costs.

Completion Date: May 2024

Cost: $15.4m

Risk: Changing asset demands


1000-year Walkway Bridge

Problem: Lack of storytelling and design that highlights our regions first arrivals and great navigators.

Solution: 1000 year bridge.

Outcome: A major tourist feature.

Completion Date: November 2024

Cost: $1.8m

Risk: Reputation


Large Wood Debris (MPI and DIA)

Problem: Life, council assets and properties at risk of wood debris remobilising during heavy rainfall events.

Solution: Removal and treatment of debris from high risk catchments, Waimata, Uawa, Hikuwai, Waipaoa, Te Arai and Waimata.

Outcome: Remove risks but enable Council to partner with iwi and landowners about future catchment management.

Risks: Difficult operational terrain and tight delivery timeframe.

Completion Date: June 2024

Cost: $54m


Bridge Rebuild Programme (CIP)

Problem: Communities have been cut off and using temporary fords or alternate routes.

Solution: Restore access.

Outcome: Provide reliable connections to our communities.

Risks: Prioritisation and isolated landowners.

Completion Date: June 2027

Cost: $23m + $1.6m from NZTA


Bridge Repair Programme (CIP)

Problem: 52 bridge require major structural repair before additional storms deteriorate onsite conditions with further loss of connection to communities.

Solution: Fix bridges.

Outcome: Provide reliable connections to our communities.

Risks: More damage caused by future weather events.

Completion Date: December 2025

Cost: $17.5m


Tiniroto Road (CIP)

Problem: Tiniroto Road by Hangaroa Bluffs is closed..

Solution: Provide a solution that will address the risks at the Bluffs.

Outcome: Provide an alternative to SH2.

Risks: Reputation and costs.

Completion Date: June 2029

Cost: $45m


Roadside Drainage Supporting Iwi Communities

Problem: Package of works that provides greater resilience to iwi communities.

Solution: Provide greater resilience on Mata-Ihungia, Te Wera and Wharekopae Roads.

Outcome: Provide an alternative to SH2 and SH35.

Risks: Currently unknown

Completion Date: June 2027

Cost: $27m


Strategic Network Review

Problem: The Tairawhiti region has suffered significantly from the impacts of severe weather events and its transport network is struggling to provide economic and social benefits that people expect, the plan focuses on our future transport systems so we can effectively plan and deliver within a finite financial budgets.

Solution: Development of a strategic network review.

Risks: Climate change.

Completion Date: April 2025

Cost: $0.5m

Project: 540016*017 Tikapa Beach **Priority 1 – High Risk** **Owner Contact: N/A** **Legal Descriptions:** POHAUTEA - PT ERODED NOT VALUE Land parcel behind Tikapa Beach) **Provisioned under:** **Section 94H(a)(ii) & (iv), Civil Defence Emergency Management Act 2002**	**Principal – GDC** Woody Debris Project Team on behalf of GDC Te Amokura – Les Harding les@teamokura.co.nz 021 876 360	**Te Runanganui o Ngati Porou Tima Taiao – Antoni McClutchie** **Project Manager:** Te Amokura - Mikaia Leach Mikaia@teamokura.co.nz 027 778 6615	**Contractor 1:** **Kuru Contracting – Ricky Kuru** ricky@kurucontracting.co.nz 027 824 4563	**Contractor 2 & 3:** Rewi Haulage Ltd Hoana Rewi Torea Logging Ltd John & Tina Dewes	

Est M3	**River: Waiapu, Maraehara, Waikaka, and Waione**	**Total Volume: 24,026 tonnes**	**Access to material**: S M D (Simple, Moderate or Difficult, highlight)	**Access to site:** S M D	Gradient: S M D	Environmental: S M D	Access Rate: S M D

Permits/ Consents Required: Section 94H(a)(ii) & (iv), Civil Defence Emergency Management Act 2002	**Resource Consents:** N/A	**Tikapa Road RP 05.256, GPS Coordinates/Safe Zone -37.794284 178.459593**	**Physical Works Contractors:** Torea Logging & Rewi Haulage	**Ground Conditions:** Luc Class 6s3, undulating stable sand flats and dunes inland from foredunes, with very weakly developed sandy soils + 8e1, Undulating and rolling foredunes subject to extreme wind erosion and erosion by wave action. 6e22, Strongly rolling to moderately steep slopes in crushed argillite and sometimes argillite hill country, without a significant cover of tephra, with potential for moderate gully, earthflow, riparian slip, and soil slip, 7e19, Strongly rolling to moderately steep and occasionally rolling or steep slopes in hill country of crushed argillite and sheared mixed lithologies (melange), with potential for very severe earthflow and severe gully, 7e24, Steep to moderately steep and sometimes very steep slopes in hill country of mainly crushed argillite and associated lithologies, with potential for very severe gully erosion - usually indicated by the presence of severe to very severely eroding gullies. The land where Tikapa Beach meets the Waiapu Awa is overlay 3, moving South for approximately 4km land is overlay 2, the southern end of the beach is overlay 3/3A.	**Land Access & Management Agreement: Land behind the Beach is owned by Mana Whenua, Tikapa Beach is managed by GDC and iwi partners.**	***Contractor H&S and Environmental documents reviewed by Te Amokura March 2024***

Site Information

Tikapa Road is considered a Local Roads within the GDC network.

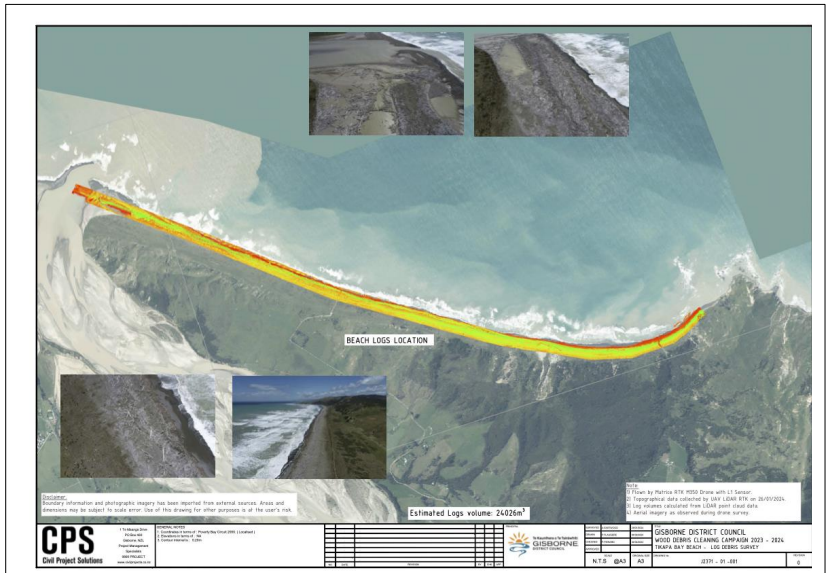
After Cyclone Gabrielle and subsequent weather events, Tikapa Beach was inundated with approximately 24,026 tonnes of woody debris along a 10km stretch of the beach.

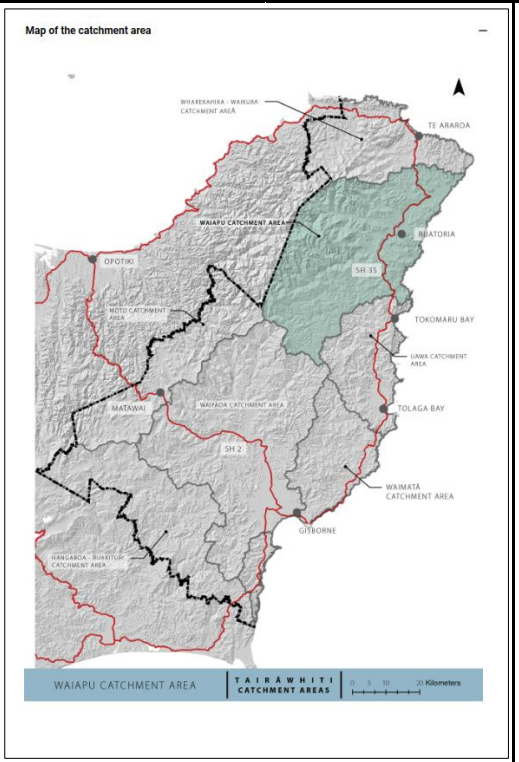
Tikapa Beach, located in Tikitiki, New Zealand, holds both archaeological and ancestral significance.

Archaeological Landscape:

1. Tikapa is an ancestral landscape where the spirit of the *iwi* (tribe) resides. Ancient agricultural fields, house sites, and campfires have left distinctive marks on the land.
2. Terraces, pits, ditches, and banks, although now overgrown, serve as reminders of ancient earthworks.
3. These physical places carry history beyond mere practicality. They are infused with historical meaning and spiritual value.
4. Archaeological research helps reconstruct the past, providing

Image 1. Tikapa Beach





Tairawhiti Plan Details

- Site is classed as Rural General.
- The Waiapu River scheduled G15A & G15C, The Maraehara River scheduled G15A, The Waikaka Stream scheduled G15A & G15B, and the Waione Stream scheduled G15A all flow into the Tikapa Beach Coastal environment. The Waiapu Awa has significant recreational values.
- The Te Awha Stream G15A, Te Kanapa Stream scheduled G15A, and the Poroporo River scheduled G15A, feed into the awa that flow into the moana.
- Tikapa Beach located in Tikitiki is an area susceptible to both coastal hazard and coastal erosion.
- The land around the beach is susceptible to low-risk landslip with pockets that are moderate to high.
- The area around the Waiapu River is liable to flooding (non-plan), along with a number of active faults (2022), it is important to note that the woody debris removal will not exacerbate these hazards.
- There is no contaminated land or HAIL Sites in the work zone
- There is an outstanding landscape (land site), which is also a geological site (Waiapu River Delta) located at the confluence of the Waiapu Awa mouth and the moana.

valuable insights that enhance tribal identity.

St. Mary's Church in Tikitiki:

5. Tikitiki is a small Māori community in the Waiapu Valley, 145 km north of Gisborne.
6. The historic and beautiful St. Mary's Church was built in 1924 as a memorial to local Māori soldiers who tragically lost their lives during World War I.
7. This church is a remarkable blend of Māori architectural design, intricate carvings, tukutuku (woven panels), and fine stained-glass windows.
8. It stands as one of the finest Māori churches in New Zealand, representing a meeting point of two cultures.

The Waiapu River holds deep cultural significance for Ngāti Porou and its hapu, symbolising their spiritual connection and historical heritage. Originating from the Mata and Tapuaeroa rivers, it winds through key landmarks like Tikitiki and Ruatōria before reaching the sea near Rangitukia.

Originating in the Raukumara Ranges, the Waiapu River begins at the confluence of the Mata and Tapuaeroa Rivers, just above the Rotokautuku Bridge at Ruatorea.

The river spans 26 kilometres through a system of river flats and flows to the coast at the ngutu awa (river mouth).

The Mata River is the largest tributary of the Waiapu and therefore the majority of the Waiapu Catchment is upstream of the Waiapu River in the Mata sub-catchment.

The coastal catchments adjacent to the Waiapu Catchment will also be included in the new Waiapu Catchment Plan. This includes streams flowing directly to the

Images of Woody Debris at Tikapa Beach

Extraction Methodology:

Mana Whenua will provide access points to the contractors to avoid disturbance to the dunes and native grasses.

Woody debris along Tikapa Beach will be extracted via 26-tonne excavators with Grapples. A shear attachment will also be utilised to cut woody into manageable sizes.

A Moxy truck, skidder and tractor with bin trailer will be utilised to cart material to designated burn piles at the high-tide line along the beach (away from the Port Awanui hills).

The Lead Contractor will have spotters onsite throughout the operation to ensure the safety of the contractors' landowners, and public alike.

Plant and machinery include:

- 4 x 26T excavators / grapple
- 1 x Skidder
- 1 x Moxy Dump Truck
- 1x Tractor / Bin Trailer
- 3 x Utes
- 1 x Water Cart Trailor
- 1 x Air Blower
- 1 x Shear Attachment

As the images depict, the inundation of debris on Tikapa Beach is significant. This material not only prevents access to freely use the beach, but it is also dangerous for tamariki and the coastal environment. Should debris remobilise there is a risk to human and environmental welfare.

- The site is not subject to any Airshed and lies approximately 139 km away from the Gisborne Urban Airshed.
- There are two Protection Management areas at the Southern end of the beach, WR6 Port Awanui. These sites should not be affected by woody debris removal.
- Tikapa Beach is predominately a General Management Area within the Coastal overlay, however, there are pockets of Significant Value area where all coastal overlay values apply.
- This site is within the Historic and Heritage alert overlay, there are a number of known taonga, archaeological sites or kōiwi identified within close proximity to the beach. The Historic Trust should be notified of physical works. Ref page 2 &3 (below) for accidental discovery protocol, and page 5 for known site locations.
- Area of Interest/Statutory Acknowledgement area, Cultural/Heritage conditions ref below.

Cultural/Heritage Conditions:

This site is an area of interest for Ngāti Porou, Whangaokena ki Ōnepoto Takutai Kaitiaki Trust, Whangaokena ki Ōnepoto Takutai Kaitiaki Trust (Marine)
The Ngā Rohe Moana o Ngā Hapū o Ngāti Porou Act 2019 - Area 2 - Whangaokeno to Ōnepoto, and Ngāti Porou Customary Marine Title Areas, and the Waiapu Awa is a Statutory Acknowledgement Area for Ngāti Porou.

There are many known taonga, archaeological sites or kōiwi (bones) around this operation. Should a previously undiscovered site be uncovered during operations, operations in the immediate vicinity will cease until the proper authorities have been notified and compliance with Heritage New Zealand Pouhere Taonga Act 2014 is established.

- Site Manger to contact Project Manager/GDC representative immediately.

sea from Whangaokena to Koutunui Head to align with the management arrangements in Nga Rohe Moana o Nga Hapu o Ngati Porou Act 2019.

A risk assessment was carried out considering potential threats to life, assets, and the environment, as per the woody debris project criteria, and this site is considered **high-risk.**

Immediate dangers of woody debris on Tikapa Beach include risk to human life which we have experienced along with serious injury, from rolling logs, the obstruction it creates for emergency responders and cleanup crews. Fallen trees, branches, and other debris can block access roads, hindering swift response to emergencies and delaying the recovery process. This can be particularly critical in situations where medical attention or assistance is required urgently.

Environmental damage is another concern associated with woody debris accumulation. As the debris breaks down over time, it can release harmful chemicals into the surrounding soil and water, potentially polluting the ecosystem and impacting local wildlife. Additionally, as the debris decays, it can provide breeding grounds for disease-carrying insects, affecting both human and animal health.

The influx of woody debris can also lead to increased erosion and disruption of natural coastal processes. The debris can trap sand and alter the movement of tides, which might lead to the erosion of beaches and dunes. This can have long-term consequences for the coastal ecosystem, impacting nesting sites for wildlife, as well as affecting the natural aesthetics of the area. It is acknowledged that in some cases the debris are forming dunes naturally, which is a good thing, these debris will be left undisturbed.

Woody Debris Burning Methodology:
Kuru Contracting plan to burn controlled LWD piles on the beach at the hightide line. Burning will be completed as the process of extraction is completed. Open air burning is the preferred method with an air blower for Tikapa, subject to wind conditions on the day. The air blower will help minimise smoke levels creating higher burn temperatures.

Incineration of any product relies on basic fire science known as "The Fire Triangle" The fire triangle is about balancing FUEL – OXYGEN – HEAT to achieve perfect combustion. For example, if the fuel is wet, it will not combust well in normal atmospheric conditions, so you pump in more oxygen to increase the heat of the fire and achieve complete combustion. In the case of wet logs, the balance of energy required to dry the wood to achieve combustion does not match the calorific value of the wood when relying on regular atmospheric-free burning. Without changing the fire triangle, the logs will smolder and smoke.
We utilize a large, motorized air blower to push more oxygen into the burning process to achieve this. The air is pumped down a heavy-duty steel pipe into the bottom of the fire to enhance combustion. The high oxygen burning creates sufficient heat (around 1100 degrees Celsius) to dry the wood and create complete and clean combustion, to contain both the oxygen and the radiant heat from the fire. This is a very different scenario to the open air burning of piled wet logs where the resultant low temp fire will smoke and smolder for weeks. Burning at 600 degrees plus creates contaminant-free discharge. There are no odorous or toxic contaminants. Obscuration is, therefore, minimal/undetectable.
Public Safety – During active burning operation, site will be monitored by Kuru contracting.

Equipment Required:
- Kuru Fan Burner
- 26t Grapple excavator
- 1 x Water Cart Trailor
- 1 x Air Blower
- Fire equipment including, fire extinguishers on all machines, Firefighting PPE (Overalls, safety helmet, gloves), Wajax pump and suction hoses, Hydro blender & soap capsules, fire hose nozzle, and water tanker.
- Woody Debris Health and Safety Manager to sign off burn permit and associated documentation prior to commencement.

Site Remediation Details:
Burn Pits will be remediated as follows:
- Site will be flooded to ensure fire is completely extinguished.
- Earth worked material, removed to create the pit bund will be reinstated, and restored to original levels.
- Disturbed soil will be revegetated with landowner preferred grass seed mix.
- Any foreign materials from operation or sorting process will be dealt with as per page 4, mitigation 11.
- Any fences removed by GDC appointed team during operation will be restored as per disposal site work schedule.
- Completion photos will be taken, and the site will be signed off by Te Amokura's delegated authority.

Images depict air blower and active burn site.

- GDC representatives to contact appropriate iwi and authority so they can enact their protocols and oversee the discovery and preservation process.

Consideration of National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES)
There is no known HAIL site and there will be no change to the current land use. As the proposed activity does not result in a change of use, is not a subdivision, and does not result in soil disturbance on a HAIL site, the NESCS does not apply.

Part 2 Matters
Section 5 describes the purpose of the Act: The purpose of this Act is to promote the sustainable management of natural and physical resources.

Te Tiriti o Waitangi
Planned work has also considered sections 5-8 of the RMA /the principles of The Treaty of Waitangi, following conditions listed in this document we will meet relevant provisions and purpose of this legislation.

Consideration of National Environmental Standard for Freshwater is applicable to this work – Te Mana o te Wai will be considered.
(Te Mana o te Wai recognises that protecting the health of fresh water protects the health and well-being of the wider environment).

Part B – Regional Policy Statement & Local Provisions considered are C1, C3, C4, C6, C7, C8, & C9. Ref page 5 for more information.

Consideration of National Environmental Standard for Air Quality, and Gisborne's urban airshed
If burning is used, this will not impact the Gazetted Urban Airshed. Closest point to the Airshed is approx 139 km.
This proposal would also fit the criteria for the Order in Council (OIC), under the Severe Weather Emergency Recovery Legislation Act 2023. While an important consideration, the health and safety risk of not undertaking this work, and the emissions caused from

Remobilisation of woody debris in this environment is common, so the proposed treatment method selected to address this site is extraction and Open air/high oxygen burning.
Proposed work should be undertaken under emergency provisions considering national & local policy rules, objectives, and cultural significance.

Earthworks Conditions

- Any Earthworks and land disturbance are to be undertaken during suitable weather conditions, dry enough to prevent rutting and puddling deeper than 300mm.
- Sufficiently isolated to avoid discharge to water.
- Land disturbance must not result in material being deposited into any waterbody.
- Fill, spoil, or side-cast material may not be placed where it will readily wash or erode into a waterbody or adjoining property.

While this work is along the beach there are several river and stream mouths which feed into the Moana, if safely accessible, material may be extracted from these confluences therefore we must consider river work conditions:

River Works – Best Practise

1. Vehicles and machinery used in the extraction of WD shall only enter the river for the purpose of WD extraction.

2. Vehicle movements in the river channel are to be kept to a minimum to control and minimise in-stream disturbance and sedimentation.

3. The disturbance of the bed shall be limited to the extent necessary to carry out the activity. All practicable steps shall be taken to avoid,

High Oxygen Burning – Risks and Mitigations

Risks

1. Air Quality: High-oxygen burns produce smoke, which can contain particulate matter, carbon monoxide, and volatile organic compounds. This can result in poor air quality, which can be harmful to human health and ecosystems.

2. Carbon Emissions: Burning wood releases carbon dioxide (CO_2) and other greenhouse gases into the atmosphere, contributing to climate change. While this is part of the natural carbon cycle, excessive burning can exacerbate global warming.

3. Soil Impact: Intense burns can affect soil properties, such as reducing soil organic matter content and altering nutrient availability. This can impact plant growth and soil health.

4. Water Quality: Runoff from burn sites can carry ash, sediment, and potentially harmful chemicals into nearby water bodies, leading to water pollution. This can harm aquatic ecosystems and affect drinking water quality.

5. Habitat Disruption: Controlled burns can disrupt habitats for wildlife species, including those that are adapted to fire-prone ecosystems. This can impact biodiversity.

6. Arsenic-contaminated ash from treated timber: The risks associated with arsenic when burning woody debris primarily concern the release of arsenic into the atmosphere and its potential environmental impacts. Arsenic is a naturally occurring element found in some wood species and can also be present because of human activities like the use of arsenic-based pesticides or treated wood.

   - Air Quality: Burning wood with arsenic can release arsenic compounds into the air, contributing to air pollution. Inhaling or ingesting airborne arsenic particles can be harmful to human health.
   - Environmental Contamination: Ash residue from burning can contain concentrated levels of arsenic. When the ash is dispersed into the environment, it can contaminate soil, water bodies, and vegetation, potentially harming ecosystems.

Mitigations

1. Burning at 600 degrees plus creates contaminant-free discharge. There are no odorous or toxic contaminants. Obscuration is, therefore, minimal/undetectable. This is applicable to the proposed high oxygen burn methodology.

2. The proposed burn system has been monitored by GDC at Tolaga Bay and particulate emissions are within the Health Limits and The District Plan for permitted activity status. The system has been further improved since this time.

3. Smoke Management: Conduct burns when weather conditions are favourable for smoke dispersion and notify the public to minimise exposure. Use firebreaks and buffer zones to reduce smoke impacts on sensitive areas.

4. Prescription Development: Develop burn prescriptions that consider factors like wind speed, humidity, and temperature to control the fire's behaviour and minimise smoke production.

5. Monitoring and Modelling: Continuously monitor air quality during burns and use modelling tools to predict smoke dispersion. Adjust burn plans as needed to minimise air quality impacts in urban areas.

6. Site Preparation: Prepare burn sites by clearing away flammable materials, creating firebreaks, and taking other measures to control fire spread.

7. Water Management: Use sediment and erosion control measures to prevent runoff from carrying ash and sediment into water bodies. Monitor water quality post-burn to detect and address any issues. The bund around the fire pits will act as a containment measure. Sites will be flooded and restored upon completion. If required residual pot ash may be dugout and taken to approved disposal facility.

8. Habitat Restoration: Develop post-burn habitat restoration plans to promote the recovery of native vegetation and wildlife habitats. On GDC land this is a decision for Liveable Spaces. On private land this material has been introduced via an event, the landowners need it removed to restore their environment to pre-cyclone conditions.

9. Community Engagement: Educate the public and nearby communities about the purpose and safety measures of controlled burns, the environmental benefits of the method (as opposed to open air low temperature burning), and possible negative effects.

10. Prescribed Burn Training: Ensure that individuals involved in conducting prescribed burns are properly trained and certified in fire management techniques and safety. Involve Fire and Emergency NZ.

11. Conduct thorough analysis of woody debris, both during extraction, and as it is placed into burn piles, separate materials a far as reasonably practicable: Separate material into following categories (if applicable), and dispose of as follows:
    - General waste including steel and plastics – to landfill.
    - Treated or tanalised timbers – approved disposal site, GDC to identify suitable disposal site options.
    - Woody debris (organic/clean matter) – Suitable for high oxygen burning.
    - If confident that ash is contaminant free, this may remain in the bunded burn bit, and capped with bund material, i.e., fill in the hole upon completion.

12. Documentation: Keep records of your disposal activities, including dates, disposal methods, and any relevant information about the contamination level. This documentation may be required for regulatory compliance.

stockpiled debris would have a far greater long-term impact on the receiving environment. Ref potential effects information.

Potential effects from woody debris stockpiles if left untreated

Woody debris, when stockpiled, can release various emissions into the environment due to natural decomposition processes and potentially even combustion if conditions are right. The emissions that can be released from stockpiled woody debris include:

1. Greenhouse Gases (GHGs): As woody debris decomposes; it releases carbon dioxide (CO_2) and methane (CH_4) into the atmosphere. These gases are considered greenhouse gases and contribute to the greenhouse effect, which can lead to global warming and climate change.

2. Volatile Organic Compounds (VOCs): VOCs are organic chemicals that can be emitted from the decomposition of woody debris. These compounds can contribute to the formation of ground-level ozone and smog, which have negative impacts on air quality and human health.
3. Odorous Compounds: Decomposing woody debris can produce various odorous compounds, such as ammonia, sulfuric compounds, and other volatile substances. These odours can be unpleasant and impact the local environment and community.

4. Particulate Matter (PM): Dust and particulate matter can be generated from the surface of stockpiled woody debris due to wind erosion and physical breakdown. These particles can contribute to air pollution and affect air quality.

5. Nutrient Leaching: As woody debris decomposes, nutrients such as nitrogen and phosphorus can be released into the surrounding soil and potentially leach into water bodies, leading to nutrient pollution and potential impacts on water quality.

6. Anaerobic Decomposition: In conditions where oxygen is limited, such as in

remedy or mitigate the release of sediment during construction and maintenance of the crossings.

4. The consent holder shall remove all materials from the river and reinstate the riverbed to as close as possible to its condition, immediately following the conclusion of the removal activities.

5. The activity shall not cause or induce erosion of the bed or banks of the river in which the crossing is located. Erosion includes:
   - **a)** Instability of land or the banks of the surface waterbody; and
   - **b)** Scour to the bed of the surface waterbody.

6. If a 20-year rainfall event is predicted (5% Annual Exceedance Probability) within 48 hours, all materials and machinery shall be removed from the river and placed in a location where floodwaters cannot disturb the materials or machinery.

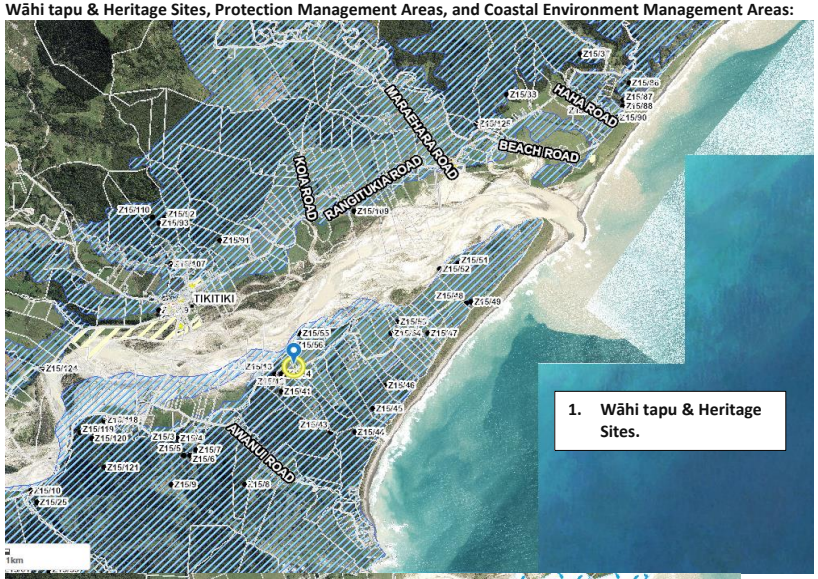
7. Stockpiled material shall be in a suitable site where potential mobilisation is greatly reduced by extreme weather events, shall be effectively isolated and stabilised to prevent surface erosion and sedimentation and to prevent debris entering waterbodies.

8. Refuelling should not be undertaken within 20m of any waterbody, spill kits suitable to the nature and scale of the activity should be located with fuel tanks, and machinery should be checked daily for fuel and oil leaks.

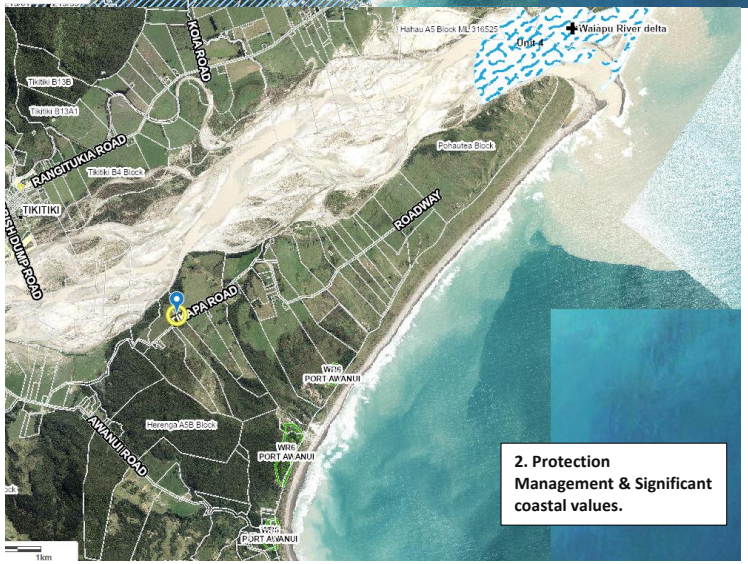
Construction/removal

9. All machinery and equipment used in the river shall be cleaned according to Biosecurity NZ Check Clean and Dry protocols (prior to and after use) to prevent the spread of aquatic

Wāhi tapu & Heritage Sites, Protection Management Areas, and Coastal Environment Management Areas:



1. Wāhi tapu & Heritage Sites.



2. Protection Management & Significant coastal values.

1. Wāhi tapu & Heritage Sites

As outlined on pages 1 & 2, Tikapa both archaeological and ancestral significance.

This image depicts all the known taonga, archaeological sites, or kōiwi.
All of the spots demarking these sites require a 100m buffer for protection, there are some very close to the work zone, so it is recommended that a Fluro tape no go zone is implemented between the Waiapu River Mouth and Awanui Road, along the dunes. While contractors will not be working in the dunes, this would serve as a reminder of the significant cultural and heritage areas to stay away from. It is also important to notify Heritage NZ of this work.

2. Protection Management & Significant coastal values.

There are several protection management areas shown at the bottom (southern) of image 2. Disturbance of these areas should be avoided.

The Confluence of the Waiapu River and the Moana is considered a Significant Values Management Area within the Coastal environment.
This area is considered a Marine Area of Significant Conservation, and an outstanding landscape.
It is very important that Coastal policies and objectives are considered within this operation, and preservation of these important areas are understood by the contractors.

waterlogged or compacted piles of woody debris, anaerobic decomposition can occur, leading to the release of methane, a potent greenhouse gas.

The specific emissions released from stockpiled woody debris can vary depending on factors such as the type of wood, moisture content, temperature, microbial activity, and the duration of the stockpiling. Management practices, such as turning the pile to promote aeration and managing moisture levels, can influence the type and quantity of emissions.

Proper management and disposal of stockpiled woody debris are important to minimise emissions and their potential impacts on the environment and human health. Options for managing woody debris include composting, mulching, or burning in controlled combustion processes designed to minimise emissions.

General Conditions

- Any placing of logs needs to ensure there is a wide area of clearance along the width of the beach to enable emergency service to be able to drive their rescue vehicles along the beach – This will not be an issue because logs will be removed from this section rather than placed.
- Beach access points are to be kept clear of woody debris to ensure the public can access the beach safely.
- NO vegetation will be removed or damaged during this operation.
- No seaweed shall be removed or taken from the beach.
- NO debris will be placed on the dunes.
- Site and road access tracks must be left tidy (free from obstruction, and debris).
- Works shall not cause erosion of the sand dunes.
- Nothing gets taken out of the sand if buried above the high-tide mark.
- Work may be required in isolated areas within the dunes, GDC, Mana

pests. A record of this cleaning shall be kept and made available to the Council on request.

Please note that best practice conditions are not exhaustive, and contractors have been thoroughly vetted around their safety and environmental management practices.

This document should be read in conjunction with Woody Debris Treatment Methodology – Environmental Risk Assessment.

Consultation:

Ngāti Porou in discussion with Te Amokura have agreed that Kuru Contracting may proceed with this work utilizing the local contractor base.

Ricky Kuru has undertaken x two site visits in collaboration with Te Amokura and the community.

A meeting was held with Te Amokura, Community Representative Graeme Aitkins, and Kuru Contracting on 18 March 2024, and a community hui was held on 20 March at Tikapa.

Of note, the community felt very strongly that local contractors should be used, it was explained that while Kuru was the lead contractor, he would be project managing Torea and Rewi to ensure best practise outcomes.

The dunes and the native grasses were also of significance to the community, the community undertook to provide designated access routes to ensure the preservation of these natural features.

Kate Reynolds has sent information to Andrew Shelton in GDC compliance, awaiting feedback.

Project Approvals

Title	Company	Contact Person	Contact Details	Plan read and understood Sign and Date
GDC Representative				
Project Manager				
Forestry Company Handover – Must be completed before commencement (If applicable) (Handover notes and photographs must be attached as appendices to this document)				
Forestry Company to Handover				
GDC Compliance		**Andrew Shelton (or authorised delegat)**	**Andrew.Shelton@gdc.govt.nz**	

Whenua, and the contractor will meet onsite to determine extents of this work to ensure debris are not at risk of remobilising. A smaller machine will be required for this portion of work to mitigate dune disruption.

Operational hours for Beach extraction

Vehicle movements on the beach to transport woody debris will be between 5am – 11pm, or as tides allow (within low tide area only).

Burning operations will run as conditions allow. Fires are currently being monitored in the Port Awanui Hills. Fire and Emergency will determine whether conditions are suitable.

Bird survey The site will be inspected prior to woody debris extraction, to identify any threatened species that may be impacted by this work.
All contractors are to be aware and keep a safe distance from any birds spotted on site. Any nesting or threatened species identified during works will be reported to Project Manager immediately, a 100-metre buffer should be implemented around the location so assessment can be made.

Principle Identified Risks – Contractor to produce site-specific risk assessment.

Site TMP requirements:

TMP Number: Contractor to determine

STMS for site: N/A

1. What can harm me? 2. What can harm others? 3. What can harm the environment?	Potential Consequences 1 – 6 (See next page)	Likelihood Of Event 5-Certain 4-Likely 3-Possible 5-Unlikely 1-Rare	Risk Rating Before Controls A, B, C, D (see next page)	RISK CONTROLS (How can we reduce the risk of personal and/ or environmental harm here?) Eliminate the hazard, or Minimise the risk	Residual Risk Rating A, B, C, D (see next page)	PERSON or TEAM RESPONSIBLE	COMPLETED BY Initials	 Date
If there is a change on site that may create a new hazard, or increased residual risk rating, this form must be reviewed, then updated if required. **Any new hazards must be communicated and signed off by the work team. Examples of change include changes in plant/equipment, work methods, scope, and site conditions.**								
SLIP / TRIP / FALL	**2**	**3**	**C**	✓ Watch where you are stepping Uneven / Slippery ground ✓ Three points of contact when climbing in or out of vehicles ✓ Be aware of machinery, implements, and equipment	**D**	Everyone onsite		
PLANT/PEDESTRIAN INTERACTION	**5**	**3**	**A**	✓ No pedestrians in 'No go zone' to be established during pre-start. ✓ Radio communication between workers ✓ Machine operator must give the okay to pedestrian before they may approach	**C**	Everyone onsite		
MULTIPLE PARTIES/ACTIVITIES ONSITE	**5**	**3**	**A**	✓ Ensure daily pre-start meeting so all parties know daily plan/movements ✓ Radio communication between workers ✓ Machine operator must give the okay to pedestrian before they may approach ✓ Emergency Plan must be decided at pre-start ✓ Machine operators have the right of way ✓ Keep public informed	**C**	Everyone onsite		
WORKING WITH ENERGISED SYSTEMS	**4**	**3**	**B**	✓ Comply with Lock-Out / Tag-Out procedure ✓ Communicate with staff ✓ Monitor and communicate with contractors	**C**	Everyone onsite		

UNSTABLE GROUND CONDITIONS	**5**	**3**	**B**	✓ Operator to assess ground conditions carefully prior to proceeding ✓ Stay well clear of unstable river edges	**C**	Everyone onsite		
WORKING IN AND AROUND RIVER MOUTH/SAND DUNES	**4**	**3**	**B**	✓ Manage worksite and locate machine so not to discharge material into watercourse ✓ Appropriate Rehab of tracks when exiting site ✓ No machines in or around the dunes	**C**	Everyone onsite		
VISITOR/PUBLIC CONTROL	**5**	**4**	**A**	✓ Have clearly defined 'NO GO' cordon area, utilising barriers, or safety tape ✓ Install safety signage ✓ Inform public of activities and its risks ✓ Ensure a suitable qualified spotter to monitor public activity near the site.	**C**	Everyone onsite		
CONTAMINATION FROM FUEL SPILL	**3**	**3**	**B**	✓ Spill kit is located where refuel tanks are located. ✓ Refuelling/Maintenance will be carried out at least 20m from any watercourse. ✓ Check machinery for fuel/oil leaks daily.	**C**	Operators in charge of plant and equipment		
OPEN AIR/HIGH OXYGEN BURNING	**5**	**3**	**B**	✓ Prescribed Burn Training: Ensure that individuals involved in conducting prescribed burns are properly trained and certified in fire management techniques and safety. Involve Fire and Emergency NZ. ✓ Have Fire Fighting Equipment onsite. ✓ Ensure appropriate weather/wind conditions	**C**	Everyone onsite		

Contractor Site Specific Requirements
Prior to commencing work, Project Manager, will site fire permit, containing safe burning parameters, and KCL site-specific risk assessment which must detail:
Worker fire safety - Worker inhalation
Log handling - Public safety and control
Fire control - Smoke nuisance control parameters - Spills, environmental compliance, and fire worksite issues

LIKELIHOOD					Risk Assessment Matrix
1-Rare Less than 1% chance	**2-Unlikely** Greater than 1% chance	**3 - Possible** Greater than 10% chance	**4 - Likely** Greater than 50% chance	**5 - Almost** certain Over 90% chance	**Consequences**
B	B	A	A	A	**6 – Catastrophic** *Examples:* **Multiple fatalities** Significant irreversible effects to 10's of people Very serious long term environmental impact
C	B	B	A	A	**5 – Extreme** *Examples:* **Single fatality** Severe irreversible effects to one or more persons Serious medium-term environmental impact
C	C	B	B	A	**4 – Severe** *Examples: Moderate irreversible* ***disability*** *to one or more persons Moderate short term environmental impact*
D	C	C	B	B	**3 – High** *Examples:* **Hospitalisation** required Medium term impairment to one or more persons Minor effects on environment
D	D	C	C	B	**2 – Medium** *Examples:* Reversible disability requiring **medical treatment** Limited environmental damage to a minimal area

Risk Assessment Rating

Risk Rating Chart

RESIDUAL RISK LEVEL	ACTION REQUIRED
A	• Immediately cease the activity • Take action to reduce residual risk to C or below
B	• Take action to reduce residual risk to C or below. • Introduce controls to reduce likelihood and/ or consequence of incident
C	• Take action to reduce risk further if practicable. • Closely supervise and monitor the effectiveness of existing risk controls
D	• Monitor the effectiveness of risk controls. • Reduce the risk further if practicable.

Completion Photos/Documentation
Progress/Completion Photos/Documentation

Journeys Gisborne District Council

HANGAROA BLUFFS – RISK ASSESSMENT FEBRUARY 2024

Tiniroto Road - RP 34.8 to RP 37.9

Project Reference: 19442
March 13, 2024

DOCUMENT CONTROL

Version	Date	Comments
1	21.02.2024	Issued for external peer review.
2	4.03.2024	Issued for external peer review.
3	7.03.2024	Issued for GDC comment.
4	13.03.2024	Issued for information.

Version	Issued For	Date	Prepared By	Reviewed By
4	Issued for Information	13.03.2024	 Caleb Gasston *MSc (Earth Science), MEngNZ* Engineering Geologist	 Joel Pollock *BSc (Earth Science and Geography)* Senior Engineering Geologist

CONTENTS

1 INTRODUCTION

1.1 Project Background

Falling, sliding, or flowing debris, stormwater runoff, and river erosion are ongoing hazards at the Hangaroa Bluffs (Figure 1), located along Tiniroto Road between RP 34.8 and RP 37.9. Heavy rainfall events through 2023 until June, including Cyclone Gabrielle in February 2023, exacerbated the land instability hazards at the site. Following geotechnical assessments in June and July 2023, this section of Tiniroto Road was closed to traffic due to the perceived risk to road users associated with slope instability and damage to the road.

Traffic is being diverted along Parikanapa Road, a single lane, gravel road in poor condition, primarily utilised by logging trucks. The detour adds approximately 1 hour of travel time for residents who live along Tiniroto Road, and road users have been found to be removing concrete barriers and blocks to bypass the bluffs road closure.

This report presents observations from an updated hazard and risk assessment of the site, incorporating feedback from WSP. It is intended to inform Gisborne District Council's (GDC's) decision making process regarding reopening of the road and includes potential control and risk mitigation measures for consideration.

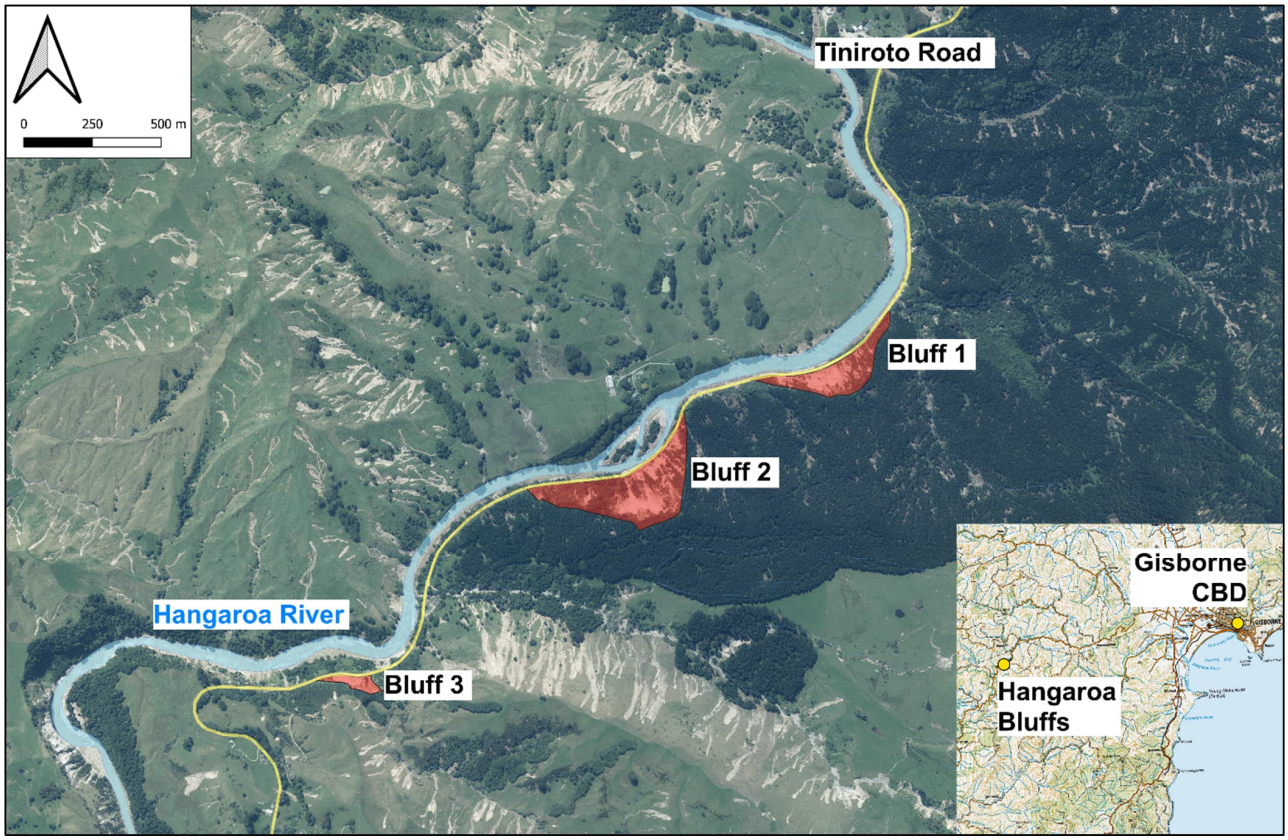


Figure 1: Location maps of the Hangaroa Bluffs.

1.2 Previous Assessment of Tiniroto Bluffs

1.2.1 LDE 2021- Bluffs 1 and 2

Following overslips due to a rainfall event in February 2021 (estimated at 65 mm of rain over 48 hrs) at Bluff 1 (~RP 35.0) and Bluff 2 (~RP 35.8), Land Development & Engineering Ltd (LDE) were engaged to undertake site assessments and provide conceptual remedial/mitigation options for overslip and rockfall hazards (LDE Ltd, 2021). The report presented conceptual options, risk levels associated with the options, and rough order cost estimates for each of the bluffs. The options were evaluated by GDC who considered them financially inviable. A summary from the report is reproduced below as Table 1.

Table 1: Mitigation Options, Rough Order Costs, Associated Risk

Option	Indicative Cost (million NZD)		Risk
	Bluff 1	Bluff 2	
Clearing of marginally stable rocks and anchored matting	$2 - $5	$1 - $3	Low to medium
Tunnel	$10 - $20	$5 - $10	Low
Bulk removal of material	$0.5 - $2	$0.25 - $1	Medium to high
Pre-cast block debris wall	$0.75 - $1	$0.45 - $0.65	Medium to high
Shallow landslide barrier	$0.75 - $1	$0.5 - $0.75	Medium
Cantilever retaining wall	$1.5 - $2	$1 - $1.3	Medium
Box culvert overpass	$3	$3	Low
Raising of road level	$3 - $5	$3 - $5	Low

1.2.2 LDE June/July 2023

Major landslips and river scour of a significant portion of the roadway occurred during Cyclone Gabrielle. Tiniroto Road was closed before being temporarily repaired and reopened at the direction of GDC.

Sustained, heavy rainfall between the 18th and 26th of June saw more than 300 mm of precipitation over a 9-day period, with 70 mm of rain falling in a 24-hour period on the 22nd. The rainfall triggered numerous slips along the Hangaroa Bluffs, and the roadway was once again blocked and severely damaged.

LDE were engaged by Journeys Gisborne District Council to undertake a risk and remedial options assessment for the Hangaroa Bluffs. High resolution aerial (drone) imagery was collected to allow safe, detailed inspection of the bluffs and the ground above them, over three site visits (28th and 30th of June 2023, and the 4th of July).

Lobes of debris from cumulative debris flows were observed at the toe of each bluff, and the catch ditches, benches and earth bunds were overtopped or damaged. Fallen boulders were observed on or along the roadway. Maintenance contractors were actively clearing the road and swales during LDE's first inspection on the 28th of June and the prior clearance prevented accurate estimation of volumes impacting the road.

3D models created from the UAV imagery revealed scarps, defects, and dilated joints coinciding with seepage behind large masses of soil, rock, and vegetation on all three bluffs. At the time of LDE's assessments, groundwater conditions were elevated to unprecedented levels due to very high antecedent rainfall.

To understand the potential hazard and inform appropriate action, the Rockfall Rating System (RHS (Waka Kotahi, 2020)) was adopted. An individual assessment was undertaken at each of the three bluffs, with the slopes assessed on a whole-bluff basis as opposed to assessing individual rockfall sources. The RHS yielded individual scores of >500 for each of the three bluffs, indicating that by NZTA criteria a serious hazard was present and remedial work was required.

LDE consulted with a specialist external contractor for slope scaling and removal who deemed the hazards presented by Bluffs 1 and 2 too significant to consider operating under safely. Initial appraisal from the geological and climactic conditions, the topography, and the geomorphology at each of the three bluffs, was that rockfall, block/wedge failure, and debris flows presented a high risk of injury or fatality to road users. Upon that advice GDC closed the road. Further assessment, monitoring, and investigation were recommended by LDE to better qualify the risk to road users prior to reopening the road.

A preliminary hazard and options assessment report prepared for GDC by LDE in August 2023 presented several remedial options and rough order costs, these are summarised in Table 2 below. GDC reviewed the options presented but in September 2023 GDC were considering the government's Cyclone Gabriele support package, which included a bypass for Bluff 1 and 2.

Table 2: Mitigation Options, Rough Order Costs

Option	Indicative Cost (million NZD)		
	Bluff 1	Bluff 2	Bluff 3
Heavy scaling and blasting	$3.6		$1.2
Scaling, sluicing, installation of anchored mesh system	$12		$5
Attenuator/ hybrid fence	$3.4		1.4

1.3 February 2024 Assessment

LDE and WSP were requested by GDC, after more than 6 months of road closure, to complete a joint assessment of the Hangaroa Bluffs and re-assess the hazard and the risk to road users. The work included:

- A visual geotechnical site assessment, alongside WSP, supplemented with an Unmanned Aerial Vehicle (UAV) survey.
- An updated assessment of the rockfall hazard using Waka Kotahi's Rockfall Hazard Rating (Waka Kotahi, 2023).
- Further interpretation of the geohazard present at each bluff, and assessment of the magnitude and occurrence of slope instability events.
- Guidance on potential management and mitigation strategies for the hazards at the Hangaroa Bluffs, in the context of the road.

A summary of the work, conclusions, and recommendations is presented in the following sections.

2 Site Study

2.1 Description

2.1.1 Tiniroto Road

Tiniroto Road is a two-lane, sealed road which services several rural settlements, and is the main alternative route to SH2 between Wairoa and Gisborne. The road has an ONRC secondary classification and estimated daily traffic of 255 vehicles (12% heavy) as of June 2021. The operational width of the roadway is recorded as 6.9 m (Mobile Road, 2023).

Between RP 34.1 and RP 37.9 Tiniroto Road is bound to the south by steep slopes (including the Hangaroa Bluffs) and to the north by the Hangaroa River (Figure 1). The corridor allows only a narrow margin, accommodating swale drains, between the slopes and the carriageway. There is high connectivity with the steep, nearby slopes and debris from instability can reach the swales and carriageway. Following Cyclone Gabrielle much of the surface of this section of the road is severely degraded, or reinstated inadequately, and in most places mud or loose gravel form the top surface of the carriageway. Overland flows across the carriageway, due to blocked or damaged drainage, have scoured the road surface and exacerbate erosion of the northern (river side) edge of the road, reducing the width of the roadway in places.

2.1.2 Hangaroa Bluffs

The Hangaaroa Bluffs includes three prominent scarps (Bluffs 1, 2 and 3 on Figure 1). For a detailed description please see LDE's prior reports. A brief description of each follow:

- Bluff 1 is located at approximately RP 35 and is 370 m in length with a face height of 122m; the slope angle is 40 to 50 degrees. The slope is comprised of siltstone with some interbedded sandstone; bedding dips approximately 35 degrees toward the southwest (i.e. across and into the slope).

- Bluff 2 is located at approximately RP 35.8 and is 360 m in length with a face height of 182 m; the slope angle is 45 to 50 degrees. The slope is comprised of siltstone with thinly interbedded sandstone; bedding dips approximately 15 degrees toward the southwest (i.e. across and into the slope).

- Bluff 3 is located at approximately RP 37.3 and is 235 m in length with a face height of 100 m. The slope angle is 65 to 70 degrees for the upper slope and 40 degrees for the lower slope. The slope is comprised of siltstone with competent interbedded sandstone with bedding dips approximately 5 degrees toward the southwest (i.e. across and into the slope).

2.2 Review of Historical Data

As part of this assessment LDE have reviewed the available data regarding past slope instability at the Hangaroa bluffs, and the impacts on the road network. From our review we have determined the following:

- Overslips have been recorded predominately in periods of heavy rainfall or extended moderate rainfall; rainfall triggering thresholds are discussed in Section 5.
- Earthquakes trigger instability.
- Significant recorded landslips that affected the carriageway are, as follows:
    - September 1932 M_w 6.9 Wairoa Earthquake (Te Puna Mātauranga o Aotearoa, 2023) – medium sized (McColl & Cook, 2024) landslide (>540,000 tonnes) closed the road.
    - May 1933 flood event (NIWA, 2023) – landslips and debris covered the road.
    - March-April 1954 storm event (NIWA, 2023) – multiple landslips closed the road twice in one week.
    - 1969 aerial photograph shows a large quantity of debris on either side of the road beneath Bluff 3.
    - 1976 aerial photograph shows a large debris fan extending into the river below the western end of Bluff 1. A fresh landslide source scar can be seen in slope above. Neither the debris nor the source scar is visible in the 1975 aerial photograph.
    - February 2021 rain event (Robertson, 2021) – multiple slips closed the road.
    - Heavy rainfall (approximately 280 mm of precipitation over a ten-day period, with >100 mm falling in 24 hours on the 23rd of March) between the 21st and 30th of March 2022 triggered instability that blocked or damaged the subject section of Tiniroto Road. Site photos were provided to LDE. The photos show large slope failures at each of the three bluffs, including block and flow-slides at Bluffs 1 and 2, and rockfall/block topples at Bluff 3. An individual block, the size of a modern ute was photographed on the road beneath Bluff 3.

  - February 2023 Cyclone Gabrielle – multiple overslips, underslips and debris flows closed the road. The northern side of road was scoured by river and a bridge over the river destroyed.
  - June 2023 rain event – large overslip and multiple smaller overslips closed road.
- In addition to the significant landslips recorded above, there are several mentioned in historic records that give a location of “near Hangaroa” or “Gisborne side of Tiniroto” but do not state Hangaroa Bluffs as the location. Some of these may have occurred at the subject site.
- Conversations with local contractors and residents indicate that the road is regularly subject to low to moderate impact events, which range in magnitude from a single boulder in the live lane to debris flows and overslips, which partly block one or both lanes. Unfortunately, LDE were not able to find records that allow the determinative assessment of event frequency.

3 February 2024 Assessment Observations

Observations from the joint WSP and LDE assessment of the Bluffs completed in February 2024 are presented below. Select UAV photos are included in Appendix A.

3.1 Bluff 1

- The bluff exposure is significantly less vegetated than 2021 photos show, particularly in the central part.
- The rainfall had sluiced many areas of the exposure to rock, that is in many places showing signs of weathering and degradation since July.
- Slope water, and seepage from defects/blocks has reduced significantly or is not occurring, relative to July 2023.
- Large bodies of displaced soil identified in the upper reaches of Bluff 1 have not appreciably displaced further.
- Several of the identified critical blocks from lower to mid-slope have partially or fully evacuated since July, however, most have not.
- Much of the tension cracking near the crest of the slopes of Bluff 1 has infilled/grown over and does not appear to have reactivated in the period since LDE’s July inspection.
- Boulders (new since July 2023) up to 950 mm in size were observed on or beside the road beneath Bluff 1.
- The available ditch was mostly infilled with material. Several debris lobes protruded into the road.
- Catch benches and earth bunds no longer effectively exist at the site. Ongoing inundation, followed by reworking during cleanup, have served to remove any formalised structure. The talus slope has been undercut for the formation of an interim stormwater drain.
- A sheet pile wall beneath Bluff 1 to protect the roadway from river scour, that was damaged significantly during Cyclone Gabrielle, showed no appreciable further damage.
- The slopes to the east of Bluff 1, located approximately between RP 34.3 and RP 34.6, have been modified since our July inspection. The road cuttings are now over steepened, having been cut to ~70 degrees.

Several scars from new rock-wedge slides (5-20 m^3) were visible in the cut faces (e.g. photos in Appendix A).

3.2 Bluff 2

- Large bodies of displaced soil identified in the upper reaches of Bluff 2 have not appreciably displaced further.
- Much of the tension cracking near the crest of the slopes of Bluff 2 has infilled/grown over and does not appear to have reactivated in the period since LDE's July inspection.
- Slope water has reduced significantly since July, but ponded water was still evident along the toe.
- Erosion and smaller magnitude failures are ongoing at the site, as evident in thedebris fans at the base of the chutes. These appear similar or more extensive since LDE's inspection in July.
- Boulders (new since July 2023) up to 1500 mm were observed on and beside the road beneath Bluff 2.
- The ditch/catch area is infilled/overtopped with slope debris along 95% of its length.
- Stormwater is currently diverted onto the roadway at swale blockages.
- Earth bunds observed in the past effectively no longer exist at Bluff 2. Continual and extensive inundation, followed by reworking during cleanup have served to remove any formalised structure.
- A retaining structure (of varying construction), in places retaining the toe of a rock revetment along the northern edge of Tiniroto Road, was damaged during Cyclone Gabrielle. Part of the rock revetment and the riverbank remain scoured out.

3.3 Bluff 3

- Components of sandstone blocks on Bluff 3, which were categorised to be at imminent risk of failure in the August 2023 report, have since fallen. However, many of the blocks with observed dilated defects that were assessed as being high risk in the July assessment remain on the slope.
- Boulders (new since July 2023) up to 900 mm were observed on and beside the road beneath Bluff 3.
- The existing bench and earth bund has been overtopped by debris along approximately 60% of its length.
- There are effectively no rockfall or overslip mitigation measures at Bluff 3.
- The toe of the slope is occupied by an undercut talus pile.
- Some revegetation of the eastern extent of the talus slope has occurred.
- Excavation of the toe of the slope, approximately 35 m east of Bluff 3, has created an over-steepened cut face exposing highly weathered rock and soil overburden.

4 HAZARD ASSESSMENT

4.1 Rockfall, Slides, and Flows (Overslips)

The three bluffs, and sections of steep, vegetated slopes between them, present instability hazards to Tiniroto Road. Distinctions in the geological, topographical, and morphological setting of each bluff control the dominant mechanism of instability (rockfall, landslide, and flow).

4.1.1 Bluff 1

The morphology of the rock face of Bluff 1 is governed by a pervasive, undulating defect, that is intersected with conjugate/differently oriented defects. The structural condition allows perched blocks to develop on the primary defect, which eventually fail as high magnitude (10-1000 m^3) slides. The weak, slake-ready rock mass and the presence of a thin soil overburden also allows for the formation of significant debris slides/flows. Erosion and instability progressively expose deeper defects in the rock mass and new potential failures. Rockfall is not as prominent a hazard due to the slope morphology and less sandstone bedding.

The review of past events, combined with LDE's site observations, show these large magnitude failures are triggered by high intensity/long duration rainfall events and have a significant impact on the carriageway. The frequency is estimated to be at least once a decade in the last 100 years, but more frequent in the last decade, occurring at annual or lesser intervals.

Smaller scale instability (<1 m^3) collects in localised talus fans at the toe of the slope, although occasional boulders from the sandstone horizons reach the roadway. This process is thought to be frequent (weekly to monthly) and generally triggered by dilation of the rock mass due to cyclical wetting/drying, freeze/thaw, and/or routine rainfall events.

Cutting into the slopes to the east of Bluff 1 (approx. RP 34.3 to RP 34.6) by contractors may have increased the susceptibility for rockfall and rock-block slides reaching the road. The rock bedding here dips steeply and unfavourably toward the road. Two wedge scars (up to 30 m^3 in size) were evident where the undercut has daylighted junctions in the bedding and intersecting defects. As the rock mass relaxes/degrades and dilation develops along defects, further rockfall will be triggered by rainfall. This segment should be considered alongside the issues of Bluff 1.

4.1.2 Bluff 2

At Bluff 2 the predominate hazards are rockfall and debris flows due to the orientation of intersecting defects that form wedges in the rock mass. Large triangular chutes extend approximately 2/3 of the way up the slope. These chutes collect and channel rock and debris from the upper slopes, predominately gravel, into talus slopes and fans along the toe. Sandstone, which occurs as prominent and discrete beds higher up the exposure, and more indurated siltstone, jut out from the surrounding rock mass through differential erosion. The unvegetated chutes allow for the

efficient transfer of boulders (larger than a football to >1 m^3) onto the roadway from the upper slopes. While the talus provides a degree of protection to the lower slope from weathering and inhibits smaller-sized rockfall from reaching the roadway, the accumulated material in the chutes remobilises as larger magnitude slides/flows into the roadway when sufficiently wetted. In past events, the resulting debris flows have run out to the river and have severely damaged the roadway.

Slope instability events of relatively low magnitude (<1 m^3) are assumed to occur at weekly to monthly intervals with routine rain events and cyclical wetting/drying and freezing/thawing. Instability of >1 m^3 including rock fall and mobilised debris flows are triggered by high intensity/long duration rainfall. Historical frequency is estimated at every one to five years but increasing in the last decade to less than annually.

4.1.3 Bluff 3

Bluff 3 has a much higher proportion of sandstone in the upper exposure with a lower dip angle for the bedding, compared to Bluffs 1 and 2. The dominant hazard is rockfall, sourced in the upper slopes due to the heterogeneous erosion of the siltstone and the more resistant sandstone, erosion of nodules within the siltstone and sandstone, and toppling failure. The sandstone rock mass is subdivided into polyhedral and tabular blocks by irregular defects. Block sizes range from small to large (60 mm – 2 m). The frequency of significant rockfalls is poorly defined but records and observations suggest it may be weekly or monthly for smaller boulders and annually for larger.

Similar to the other two bluffs, low magnitude and lower mobility debris volumes from weathering and erosion of the siltstone is observed to be relatively frequent, collecting as talus slopes along the toe. This would impact the carriageway when fluidised and mobilised into debris avalanches and debris flows during periods of high rainfall.

A section of the slope approximately 35 m east of Bluff 3 has been recently excavated by contractors to widen the carriageway. The oversteepening of weak materials and removal of buttressing around the toe of the slope here will likely result in another area of instability during rainfall events. Furthermore, the exposure reveals that a zone of weak materials may be present and possibly relates to the adjacent underslip. This should be considered in management planning.

4.1.4 Other Locations

In addition to the slope failures observed at/near the individual bluffs, overslips, underslips, and debris flows were observed along the roadway after Cyclone Gabrielle at the following locations:

- RP 34.790 – Debris Flow
- RP 34.869 – Bank Erosion
- RP 34.969 - Overslip
- RP 35.349 – Overslip and Debris Flow
- RP 35.471 – Large Overslip – significant quantity of debris remains on slope.
- RP 35.516 - Overslip
- RP 35.550 - Overslip

- RP 35.698 – Large Debris Flow – significant quantity of debris and woody debris remains on slope.
- RP 36.223 – Debris Flow
- RP 36.302 – Overslip
- RP 36.460 – Debris Flow
- RP 36.490 – Overslip
- RP 36.511 – Overslip

The magnitude and impact on the roadway vary from feature to feature. However, the additional hazard areas along the roadway should be accounted for when determining an appropriate remedial solution to the bluffs.

4.2 Surface Water Runoff

Due to the constraints of the site, the catch ditches and earth bunds alongside the bluffs double as stormwater swales. These, and any intermittent culverts to the river, are often compromised with debris from the slopes. The size and function of the swales and drainage measures are insufficient for the demands of the site. As a result during even routine rain events, slope water is redirected across the road, exacerbating the poor condition of the road surface, and depositing entrained sediments over the road. In significant events the channelised flow has been observed to scour the northern edge of the roadway, road shoulder and riverbank.

4.3 River Erosion

The Hangaroa River constrains the northern side of Tiniroto Road, which is impacted by high river flows and velocities, particularly in the locations of Bluff 1 and Bluff 2. Existing measures were inadequate to mitigate the effects of the extremely elevated flow height and velocity during Cyclone Gabrielle, and subsequent rain events, and were damaged. Beneath Bluff 1, a significant portion of the road was lost to scour. Given the current state of the scour prevention measures, there is a significant risk that scour of the roadway at the locations of Bluff 1 and Bluff 2 will continue to occur during periods of moderately increased river flow.

An underslip occurred at RP 37.219 (just to the east of Bluff 3) during Cyclone Gabrielle. The landslip was triggered by a combination of intense rainfall and undercutting of the toe of the slope by the Hangaroa River. The landslip caused significant damage to the roadway, the ground beneath the northern lane being completely evacuated. The upper part of the landslip had been infilled and the road partially repaired to allow limited traffic prior to closure of the road. There is a risk of reactivation in periods of high rainfall or elevated flow in the river channel as well as further undercutting.

4.4 Rockfall Hazard Rating

The Waka Kotahi Rockfall Hazard Rating (RHR) procedure (Waka Kotahi, 2023) was adopted to assess the hazard at each bluff as a whole element. The RHR allocates points to individual metrics (e.g., slope height, block size) dependent on that metrics contribution to the magnitude, frequency or impact of rockfall at the site. Higher point allocations are given to metrics which contribute to higher hazard potential. The sum of the points allocated to each

metric is determined to provide a rating for the site (total possible score is 891), a higher rating indicates a likely higher level of risk on road traffic associated with the rockfall hazard at the site.

It should be noted that the method assigns heavier weighting to the geological or topographical characteristics of the slope, and parameters related to the road, compared with probability of a road user interacting with the hazard. As a result, the RHR should not be regarded as a definitive assessment to determine the risk to individual road users, but rather a tool to inform proactive management and enable comparison against other local site assessments (i.e. the bypass road). While high-frequency and low-magnitude instability (erosion, slides, weathering) from the bluffs is recognised to affect the road and drainage, the lower-frequency but higher-magnitude instability hazard that would more likely close the road or present risk to life safety is captured by the RHR.

The analysis undertaken assumed the following. The full analysis sheets are provided in Appendix B:

- National Average Daily Traffic (ADT) of 255 vehicle movements
- Posted Speed limit of 100 km/h, Decision Site Distance of 300 m)
- Measured Sight Distances of 100 m (Bluff 1), 70 m (Bluff 2), and 50 m (Bluff 3).
- Slope, boulder, and block sizes were measured from drone and aerial imagery, and from regional LiDAR and are detailed in Appendix B.
- Rock fall history was determined to be “occasional falls” to “many falls” and occasionally severe, based on a review of historic data, and conversations with local contractors and residents. It must be noted that formal records and observations from road maintenance contractors are not available.

Waka Kotahi provides rating categories which indicate the type of approach which may be appropriate for a given site, the categories are as follows:

- RHR <275 no action needed, continue to check.
- >325 should be inspected in closer detail by an experienced geotechnical engineer.
- RHR >500 is likely to be a serious hazard and remedial work is almost certainly required soon.

Revised RHR are 579 for Bluff 1, 453 for Bluff 2, and 465 for Bluff 3.

These numbers confirm what is already known from road closures and engineer observations, that more detailed inspection is required and that all three bluffs present serious hazards requiring remedial work. Due to the geological and morphological condition of the bluffs and river, there is no viable opportunity to appreciably reduce the metric to <275 where no action is considered necessary. Furthermore, the RHR does not account for the compounding hazards presented by stormwater and river scour causing under slips. These values should be considered relative to the risk presented by the bypass Parikanapa Road.

5 TRIGGERING MECHANISMS

Rainfall is the predominate trigger of significant instability within the bluffs which has a high impact on the road. The review of historic landslip activity at the site and assessment of events in the last two years indicates that the rainfall

threshold for triggering a significant landslip event is in the order of 30-150mm within a 24-hour period. Antecedent rainfall is also an important factor, but there is insufficient information particularly for older events. Furthermore, all rainfall data is from a significant distance from the Hangaroa Bluffs and therefore should not be considered reliable for the site.

Only one instance of seismic-induced instability was identified. Seismicity is not related to the present road closure so this will not be discussed further in this report. However, the sustainability of the road may be compromised by larger earthquakes and therefore seismicity should not be omitted in future planning and management.

6 Risk Assessment

WSP undertook a preliminary numerical analysis of the risk to road users from rockfall along the subject section of Tiniroto Road. Their analysis indicates that the risk of death to a road user undertaking a single trip through the bluffs is very low. However, due to paucity of data, many assumptions on event frequency and magnitude have a reasonable degree of uncertainty which may significantly affect the calculated probabilities. More accurate data regarding the frequency and magnitude of slope instability events at the Hangaroa Bluffs is essential to inform quantitative risk analysis with greater certainty. Preliminary low risk probabilities are largely owing to the low traffic volumes of the road rather than the frequency of hazards. Assumed, daily traffic volumes in any future probabilistic assessment should allow for instances when this route is required to provide an alternative to State Highway 2.

7 Conclusions and Recommendations

7.1 Conclusions

Tiniroto Road has historically been affected by instability from the Hangaroa Bluffs, although event magnitude and frequency are poorly documented. Unprecedented rainfall events through 2023 up to June led to GDC enforcing a road closure due to sustained damage and the potential for further hazardous slope instability as identified by LDE.

The alternative route (Parikanapa Road) is regarded as both inconvenient and unsafe for the required daily traffic loads. Road users have been found to be bypassing the bluffs road closure by removing concrete barriers and blocks.

In the intervening time between geotechnical assessments in July 2023 and February 2024, climatic conditions have been relatively favourable, with the Gisborne region experiencing lower rainfall than the previous 6 months. During the latter half of 2023, and January of 2024, slope instability occurred at the Bluffs, but was generally of a lower magnitude, and less extensive, than had been anticipated from LDE's initial appraisal. A re-evaluation of the slope instability hazard shows that large magnitude instability is triggered by significant rainfall events, where lower magnitude instability is more frequent, being triggered by regular cyclical phenomena (wetting/drying etc).

Larger magnitude instability events at all the Bluffs cause segments of the road to be partially or completely blocked, damaged, or destroyed. The frequency of these events is bluff specific and poorly constrained, but observations suggest they are in the order of 1 per month to 1 per decade. The RHR shows that by NZTA criteria, the high magnitude instability events present a serious hazard to road users that require more detailed geotechnical inspection and remedial work. Preliminary risk estimates, which indicate a low probability for rockfall interaction with a vehicle, or fatality caused by a rockfall event on a single trip, reflect the low daily traffic volumes along Tiniroto Road rather than the frequency of instability at the Hangaroa Bluffs.

Smaller volumes of material, evacuating from the bluffs, frequently accumulates along the toe of the slopes at road level. Aggradation in the existing swales, on catch benches, and within culverts diverts water across the road, damaging the carriageway, causing scour of the road shoulder, and depositing sediment on the road. Routine maintenance of drainage infrastructure, clearance of talus fans, and improved measures to prevent material reaching the road, would reduce the potential for damage to the road, and the risk to road users, from higher frequency/ low magnitude events.

The geological and structural condition of the rock mass, the scale of the features involved, and the high volumes of the potentially unstable blocks, present inhibitive challenges to wholesale mitigation measures. With the river constraining the northern edge of the road and the Bluffs the southern edge there is little to no room for road retreat. The issues for Bluff 1 and Bluff 2 could be resolved with the proposed road realignment, or bypass, however, this is likely to be some years away from completion. At Bluff 3, a longer term forward works programme should be developed which incorporates measures to increase the resilience and reduce the risk at the site. Until the alternative route is completed, and appropriate measures can be put in place at Bluff 3, GDC will need to manage the hazards present at the Bluffs and the associated risk to road users at the site.

Additional locations between the bluff segments which present a slope instability hazard to road users have been identified. These should be further assessed and considered alongside the proposed management programme.

GDC will need to take a proactive approach to understanding and managing the risks posed by the Hanagroa Bluffs through active monitoring, and recording of site-specific climatic data and instability events, so that informed decisions (such as road closure or future treatment) can be made and implemented.

7.2 Recommendations

A well-considered and pragmatic strategy, discussed herein, is required to control the hazards and risk sufficiently for the road to be opened through the bluffs. We recommend that GDC, together with WSP, the maintenance contractor and LDE, work together to collaboratively develop a risk management plan. Actions and responses should be aligned to suit GDC's preferences and appetite for risk. A workshop, with representation from those providing key inputs, is often a productive and efficient way to develop these plans.

The following elements should be considered in the development of the risk management plan:

1. A site-specific Trigger Action Response Plan (TARP).

Triggers will initially set at a suitably conservative level, based on existing evidence and data, and a monitoring plan be developed to validate, or justify the adjustment of, threshold levels. GDC should consider at least one telemetered rain gauge be installed to collect site specific rainfall data and correlate this with surrounding rainfall gauges in the area to refine the thresholds in the TARP.

The maintenance contractor should provide maintenance records include notes and photos formally detailing the locations, quantity and type of material/debris on or near the road, the amount of water on/below the slope, and the condition of the site drains, ditches and bunds.

Geotechnical monitoring might include detailed mapping and difference modelling of the bluffs to understand the instability response to antecedent rainfall and intense rainfall events. The TARP can be amended as confidence builds about the frequency and magnitude of instability at the bluffs and, by extension, the risks posed to road users.

An example TARP is presented as Appendix C.

2. A maintenance and improvements plan.

   This plan should include a well-considered and appropriately monitored maintenance plan, identification of economic risk mitigation initiatives, and improvements to the drainage infrastructure.

Further relevant discussion is provided below.

7.2.1 Mitigation of High Frequency/Low Magnitude Instability Events

The following elements should be considered for risk mitigation of high frequency/ low magnitude events:

1. Regular maintenance of drains, ditches, culverts, and bunds during fair weather conditions. Event specific maintenance undertaken following periods of heavy rainfall in accordance with the agreed maintenance and improvements plan.
2. Rockfall hazard signage at the start and end of the Hangaroa Bluffs.
3. ‘No stopping’ signage prior to high hazard segments of the road, which may include other hazard areas between the bluffs.
4. Reduction of the posted speed limited from 100km for the section of road encompassing the bluffs.
5. Reduction to a single lane beneath each bluff to increase the catch ditch width and provide room for mitigation measures, maintenance, etc.
6. Appropriate traffic management measures.
7. Reinstatement of the road surface as required.
8. Installation of hard engineering measures to prevent river scour at critical junctures.
9. Drainage improvements.
10. Installation of protective barriers. These may include concrete barriers, earth bunds, etc.
11. Protection of the lower (accessible) bare slopes to slow the weathering of the mudstone. This may include revegetation, hydro seeding, installation of geotextile, etc.

12. Debris interception structures below the defined chutes in Bluff 2 between the catch ditch and the live lane. Concrete bollards and containers filled with site-won rock have proven effective in other areas.
13. A programme of targeted risk removal works, including scaling to remove overhanging or larger unstable rock blocks. This is likely to be suitable for Bluff 3 only given the height of the other bluffs.
14. Mitigation measures along the section approximately between RP 34.3 and RP 34.6 to reduce the chance of rockfall reaching the carriageway.

7.2.2 Mitigation of Low Frequency/High Magnitude Instability Events

The following elements should be considered for risk mitigation of low frequency/ high magnitude events:

1. Temporary road closures as required by a developed TARP.
2. Assessment of alternative routes, such as the proposed by-pass.
3. Development of a longer term forward works programme to identify and develop actions to remove high risk features as necessary.

8 LIMITATIONS

This report should be read and reproduced in its entirety including the limitations to understand the context of the opinions and recommendations given.

This report has been prepared exclusively for Journeys Gisborne District Council in accordance with the brief given to us or the agreed scope and they will be deemed the exclusive owner on full and final payment of the invoice. Information, opinions, and recommendations contained within this report can only be used for the purposes with which it was intended. LDE accepts no liability or responsibility whatsoever for any use or reliance on the report by any party other than the owner or parties working for or on behalf of the owner, such as local authorities, and for purposes beyond those for which it was intended.

This report was prepared in general accordance with current standards, codes and best practice at the time of this report. These may be subject to change.

Opinions given in this report are based on visual observations only. Actual conditions could vary from those assumed herein.

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APPENDIX A
SITE PHOTOS

Figure 1: UAV view to south of Bluff 1 showing expansive 'rain sluiced' bare rock exposure. Debris fans are evident in concave slope areas.

Figure 2: Oblique view to southwest of upper middle section of Bluff 1. Large blocks overhand areas where failure has already occurred, above a secondary defect.

Figure 3: UAV view to east of Bluff 1 along planar (structural defect-controlled face). Perched blocks of weathered rock/soil and vegetation are evident, intersected by the pervasive defect. A remnant of an earth bund and accumulated sediment are evident at the slope toe.

Figure 4: Mid to western extent of Bluff 1, showing with arrows areas where road width has been affected by a drop-out and the compromised sheet pile wall.

Figure 5: Contractor cut face before Bluff 1 between 34.3 and 34.6.

Figure 6: Contractor cut face before Bluff 1 between 34.3 and 34.6.

Figure 7: UAV view to south of Bluff 2. The channelised character of the slope is evident, with talus slopes and debris fans along the slope toe pushing into the roadway. Water flow was minimal after an extended period of dry weather. The debris fans have blocked the narrow drain/ditch which pushes stormwater flow over the road.

Figure 8: Dropouts along mid-section of Bluff 2. A culvert is visible in one of the dropouts, showing the extent of bank loss. Further west is a damaged section of retaining wall.

Figure 9: Overhanging sandstone bedding above more erodible mudstone in Bluff 2. Blocks fall from great height and are often channelled through the chutes into the roadway.

Figure 10: Displaced mass of residual soil and vegetation at the top (southwest) of Bluff 2. Future slide failure hazard.

Figure 11: UAV to southwest of Bluff 3. Closer examination reveals large boulders that have reached the road or beyond in past events.

Figure 12: View to southwest of large underslip narrowing the roadway beneath Bluff 3. Contractors have cut back into the slope toe to widen the road, exposing highly weathered weak rock.

Figure 13: Oblique view to west of overhanging sandstone over weak erodible mudstone exposure, with talus slopes.

Figure 14: Close up, viewed to west, of dilated cracks in large block of overhanging sandstone.

APPENDIX B

ROCKFALL HAZARD RATING

ROCKFALL RATING FIELDSHEET

Rockfall Hazard Rating Fieldsheet					
SH: TINIROTO ROAD -		**RP:** 35.03	**Area:** WAIPAOA	**RHS/LHS**	**Length** 370m
Category		**Rating Criteria and Score**			
		Points 3	**Points 9**	**Points 27**	**Points 81**
Slope Height		7.6m	15.2m	22.9m	30.5m
Ditch effectiveness		Good catchment: all or nearly all of falling rocks are retained in the catch ditch	Moderate catchment: falling blocks occasionally reach the roadway	Limited catchment: falling rocks frequently reach the roadway	No catchment: no ditch or ditch totally ineffective
Average vehicle risk		25%	50%	75%	100%
% of decision sight distance		Adequate sight distance, 100% of low design value	Moderate sight distance, 80% of low design value	Limited sight distance, 60% of low design value	Very limited sight distance, 40% of low design value
Roadway width including paved shoulders		13.4m	11.0 m	8.5m	6.1m
Geological Character	**Case 1**	CASE 1: for slopes where discontinuities are the dominant structural feature			
		Structural condition	Discontinuous joints, favourable orientation	Discontinuous joints, random orientation	Discontinuous joints, adverse orientation	Continuous joints (joint persistency >3m), adverse orientation
		Rock Friction	Rough, irregular	Undulating	Planar	Clay infilling, slickensided or low friction mineral coating
	Case 2	CASE 2: for slopes where differential erosion or over steepened slopes is the dominant condition that controls rockfall. Common slopes that are susceptible to this condition are: layered units containing easily weathered rock that erodes undermining more durable rock.			
		Structural Condition	Few differential erosion features	Occasional erosion features	Many erosion features	Major erosion features
		Difference in Erosion Rates	Small difference; erosion features develop over many years	Moderate difference; erosion features develop over a few years	Many erosion features; erosion features develop annually	Major erosion features; erosion features develop rapidly
Block size		300mm	600mm	900mm	1500 mm
Quantity of rockfall/event		1 m^3	1.5 m^3	2.5 m^3	3.0 m^3 or greater
Climate and presence of water on slope (adjusted for NZ conditions)		Low to moderate precipitation eg<450mm /year; no freezing, no water on slope	Moderate precipitation 450-2m/yr or short freezing (<1 week) periods or intermittent water on slope (seasonal or in response to rainfall)	High precipitation >2m/yr or long freezing periods (>1 week frozen) or continual water on slope	High precipitation >2m/year and long freezing periods or continual water on slope and long freezing periods (>1week frozen)
Rockfall history		Few falls; rockfall only occurs a few times a year or less	Occasional falls; rockfall can be expected several times a year	Many falls; frequent rockfalls during a certain season, e.g. winter freeze-thaw	Constant rockfalls; rockfalls occur frequently throughout the year
AAHT = AADT/Z4 =255/24=1		**Posted Speed Limit (km/h)** 100km/h	**Measured Sight Distance m** ~100m	**Decision Sight Distance m** 300m	**Total Score** 579

ROCKFALL RATING FIELDSHEET

Rockfall Hazard Rating Fieldsheet					
SH: TINIROTO ROAD -		**RP:** 35.88	**Area:** WAIPAOA	**RHS/LHS**	**Length** 360m
Category		**Rating Criteria and Score**			
		Points 3	**Points 9**	**Points 27**	**Points 81**
Slope Height		7.6m	15.2m	22.9m	30.5m
Ditch effectiveness		Good catchment: all or nearly all of falling rocks are retained in the catch ditch	Moderate catchment: falling blocks occasionally reach the roadway	Limited catchment: falling rocks frequently reach the roadway	No catchment: no ditch or ditch totally ineffective
Average vehicle risk		25%	50%	75%	100%
% of decision sight distance		Adequate sight distance, 100% of low design value	Moderate sight distance, 80% of low design value	Limited sight distance, 60% of low design value	Very limited sight distance, 40% of low design value
Roadway width including paved shoulders		13.4m	11.0 m	8.5m	6.1m
Geological Character	**Case 1**	CASE 1: for slopes where discontinuities are the dominant structural feature			
		Structural condition	Discontinuous joints, favourable orientation	Discontinuous joints, random orientation	Discontinuous joints, adverse orientation	Continuous joints (joint persistency >3m), adverse orientation
		Rock Friction	Rough, irregular	Undulating	Planar	Clay infilling, slickensided or low friction mineral coating
	Case 2	CASE 2: for slopes where differential erosion or over steepened slopes is the dominant condition that controls rockfall. Common slopes that are susceptible to this condition are: layered units containing easily weathered rock that erodes undermining more durable rock.			
		Structural Condition	Few differential erosion features	Occasional erosion features	Many erosion features	Major erosion features
		Difference in Erosion Rates	Small difference; erosion features develop over many years	Moderate difference; erosion features develop over a few years	Many erosion features; erosion features develop annually	Major erosion features; erosion features develop rapidly
Block size		300mm	600mm	900mm	1500 mm
Quantity of rockfall/event		**1** m^3	1.5 m^3	2.5 m^3	3.0 m^3 or greater
Climate and presence of water on slope (adjusted for NZ conditions)		Low to moderate precipitation eg<450mm /year; no freezing, no water on slope	Moderate precipitation 450-2m/yr or short freezing (<1 week) periods or intermittent water on slope (seasonal or in response to rainfall)	High precipitation >2m/yr or long freezing periods (>**1** week frozen) or continual water on slope	High precipitation >2m/year and long freezing periods or continual water on slope and long freezing periods (>1week frozen)
Rockfall history		Few falls; rockfall only occurs a few times a year or less	Occasional falls; rockfall can be expected several times a year	Many falls; frequent rockfalls during a certain season, e.g. winter freeze-thaw	Constant rockfalls; rockfalls occur frequently throughout the year
AAHT = AADT/Z4 =255/24=1		**Posted Speed Limit (km/h)** 100km/h	**Measured Sight Distance m** ~60m	**Decision Sight Distance m** 300m	**Total Score** 453

ROCKFALL RATING FIELDSHEET

Rockfall Hazard Rating Fieldsheet					
SH: TINIROTO ROAD -		**RP:** 37.03	**Area:** WAIPAOA	**RHS/LHS**	**Length** 235m
Category		**Rating Criteria and Score**			
		Points 3	**Points 9**	**Points 27**	**Points 81**
Slope Height		7.6m	15.2m	22.9m	30.5m
Ditch effectiveness		Good catchment: all or nearly all of falling rocks are retained in the catch ditch	Moderate catchment: falling blocks occasionally reach the roadway	Limited catchment: falling rocks frequently reach the roadway	No catchment: no ditch or ditch totally ineffective
Average vehicle risk		25%	50%	75%	100%
% of decision sight distance		Adequate sight distance, 100% of low design value	Moderate sight distance, 80% of low design value	Limited sight distance, 60% of low design value	Very limited sight distance, 40% of low design value
Roadway width including paved shoulders		13.4m	11.0 m	8.5m	6.1m
Geological Character	**Case 1**	CASE 1: for slopes where discontinuities are the dominant structural feature			
		Structural condition	Discontinuous joints, favourable orientation	Discontinuous joints, random orientation	Discontinuous joints, adverse orientation	Continuous joints (joint persistency >3m), adverse orientation
		Rock Friction	Rough, irregular	Undulating	Planar	Clay infilling, slickensided or low friction mineral coating
	Case 2	CASE 2: for slopes where differential erosion or over steepened slopes is the dominant condition that controls rockfall. Common slopes that are susceptible to this condition are: layered units containing easily weathered rock that erodes undermining more durable rock.			
		Structural Condition	Few differential erosion features	Occasional erosion features	Many erosion features	Major erosion features
		Difference in Erosion Rates	Small difference; erosion features develop over many years	Moderate difference; erosion features develop over a few years	Many erosion features; erosion features develop annually	Major erosion features; erosion features develop rapidly
Block size		300mm	600mm	900mm	1500 mm
Quantity of rockfall/event		**1** m^3	1.5 m^3	2.5 m^3	3.0 m^3 or greater
Climate and presence of water on slope (adjusted for NZ conditions)		Low to moderate precipitation eg<450mm /year; no freezing, no water on slope	Moderate precipitation 450-2m/yr or short freezing (<1 week) periods or intermittent water on slope (seasonal or in response to rainfall)	High precipitation >2m/yr or long freezing periods (>1 week frozen) or continual water on slope	High precipitation >2m/year and long freezing periods or continual water on slope and long freezing periods (>1week frozen)
Rockfall history		Few falls; rockfall only occurs a few times a year or less	Occasional falls; rockfall can be expected several times a year	Many falls; frequent rockfalls during a certain season, e.g. winter freeze-thaw	Constant rockfalls; rockfalls occur frequently throughout the year
AAHT = AADT/Z4 =255/24=1		**Posted Speed Limit (km/h)** 100km/h	**Measured Sight Distance m** ~70m	**Decision Sight Distance m** 300m	**Total Score** 465

APPENDIX C

SAMPLE TARP

DRAFT TARP for Slope Instability at Hangaroa Bluffs, Tiniroto Road - R34.8 and RP 37.5

	Site Conditions	Level 1 – Operate With Controls	Level 2 – Heightened Awareness/Partial Closure	Level 3 –Closure
Trigger*	**Rainfall**	Predicted/ daily and antecedent rainfall below green line in Figure 1: rainfall less than 40mm in a 24-hr period or 10-day antecedent rainfall less than 120mm.	Predicted/ daily and antecedent rainfall between green and orange line in Figure 1: rainfall between 40mm and 80mm in a 24-hour period or 10-day antecedent rainfall exceeding 120mm.	Predicted/ daily and antecedent rainfall triggers above orange line in Figure 1: rainfall exceeding 80mm in a 24-hour period or 10-day antecedent rainfall exceeding 200mm.
Response	**Road Access**	• Site under appropriate TTM – single lane closure, automated stop-go lights • No stopping enforced • Rockfall signage	• Road closure at night (10pm to 7 am) • Alert sent to residents	• Full road closure • Return to Level 1 or 2 once conditions meet reduced level criteria and following assessment and approval by geo-professional.
	Actions	• Not applicable	• Maintenance contractor put on standby. Mobilise road clearing equipment to site. Install overnight road closure. • Geotechnical engineer advised.	• Civil Defence advised. • Maintenance contractor to install closure. • Geotechnical Engineer advised
	Post-Event Assessment & Re-opening of Road	• Not applicable	• Return to Level 1 when all observations return below Level 2 threshold, or after 24 hours if no instability is observed by the Maintenance Contractor or additional rain predicted.	Once trigger rainfall conditions ease below Level 2: • Geotechnical engineer/geologist to inspect site to ascertain the risk of reopening the road, fly UAV if weather permits. • Geotechnical engineer to advise GDC if risk assessment has changed and advise on remediation plan (if required). • GDC to decide on road opening.
Responsibility Plan	**Maintenance Contractor**	• Routine inspections and clearance of drainage ditch. • Document and provide formal records and photographs for each inspection noting areas of instability	• Daily monitoring • Install overnight road closure	• Install road closure
	GDC	• Maintain telemetered rainfall gauge. • Weather reporting • Collect and database Maintenance Contractor inspection records	• Weather forecast monitoring. • Scheduled contact with the Maintenance Contractor and Geotechnical Engineer • Sending alerts and media updates, including advisement of Maintenance Contractor and Geotechnical Engineer	• Constant contact with Civil Defence, the Maintenance Contractor, and Geotechnical Engineer • Notify Regional Management/ National Management / Communications and Engagement Team • Sending closure notice and media updates
	Geotechnical Engineer	• 6 monthly inspections • Update and refine TARP based on rainfall gauge, Maintenance Contractor records, and routine inspection site observations. • Develop georeferenced 3D model of the bluffs	• Prepare to attend site if Level 3 eventuates or at the request of GDC. • Advise the Maintenance Contractor and GDC on alert details. • Reporting to required frequency	• Complete inspections as required. • Advise Maintenance Contractor and GDC on alert details. • Reporting to required frequency

NOTES:

1. TARP – Trigger Action Response Plan.
2. This TARP provides rainfall-triggering thresholds based on historical regional data. Site specific data should be obtained.
3. These recommendations may be adjusted as more data becomes available and as mitigation works are completed.
4. Weather conditions should be monitored regardless of the slope conditions.
5. Observations of slope condition during maintenance work is the responsibility site engineer/ foreperson (or site geoprofessional).
6. If unsure of conditions, consult a geoprofessional.

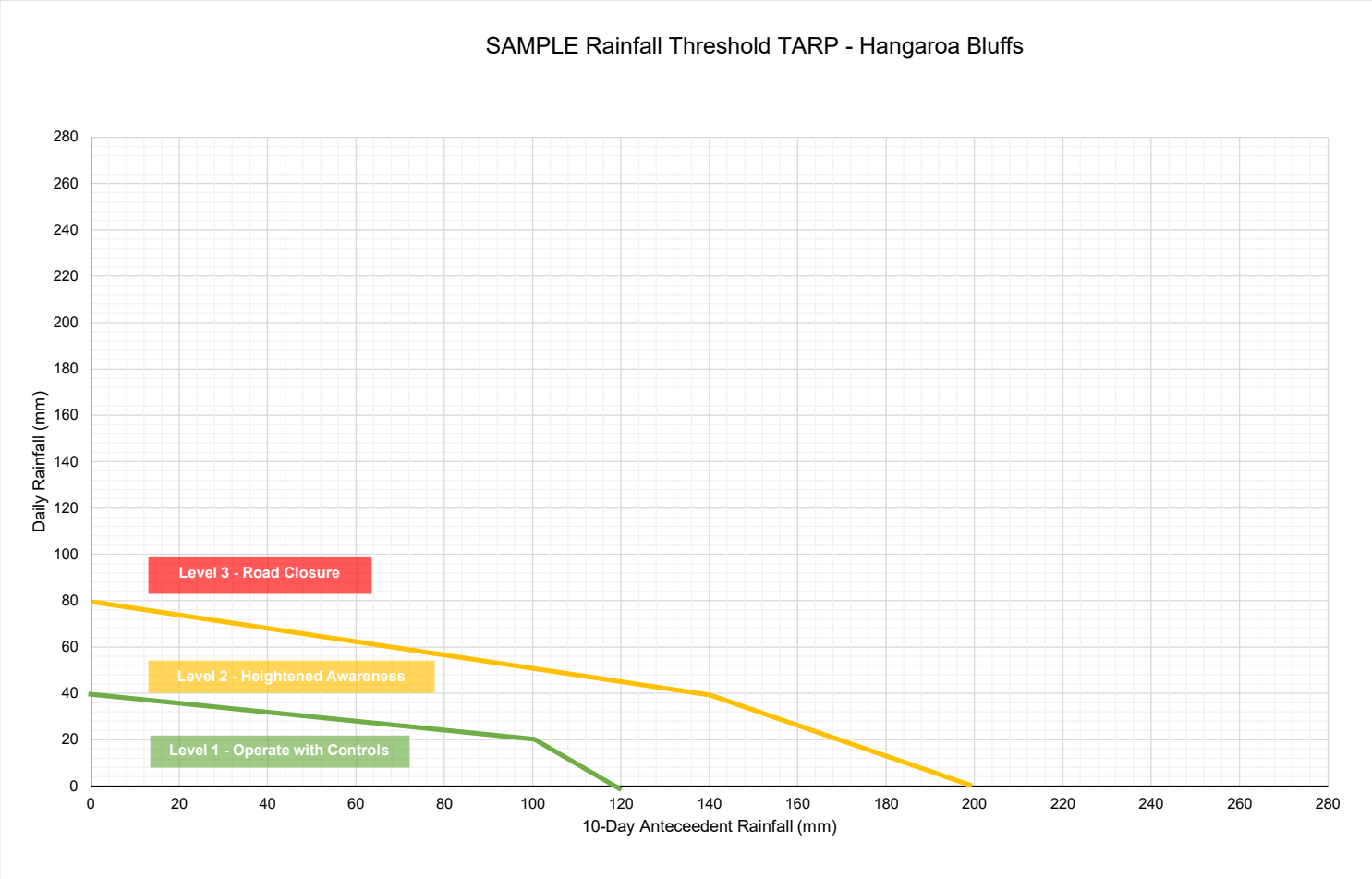

Figure 1: Gisborne regional rainfall TARP rainfall thresholds adopted for Hangaroa Bluffs. Trigger thresholds are derived from regional data and work done by Glade et al. (2000)[1] It is intended that this would be populated with site specific rainfall and instability data. Each data point would indicate whether instability occurred for an event with a given daily vs antecedent rainfall. Instability volumetric magnitude could also be indicated.

1. *Glade T., Crozier M., Smith P., (2000) Applying Probability Determination to Refine Landslide-triggering Rainfall Thresholds Using an Empirical "Antecedent Daily Rainfall Model", Pure and Applied Geophysics 157 (2000) 1059-1079*

DRAFT TARP for Slope Instability at Hangaroa Bluffs, Tiniroto Road - R34.8 and RP 37.5

	Site Conditions	Level 1 – Operate With Controls	Level 2 – Heightened Awareness/Partial Closure	Level 3 –Closure
Trigger*	**Rainfall**	Predicted/ daily and antecedent rainfall below green line in Figure 1: rainfall less than 40mm in a 24-hr period or 10-day antecedent rainfall less than 120mm.	Predicted/ daily and antecedent rainfall between green and orange line in Figure 1: rainfall between 40mm and 70mm in a 24-hour period or 10-day antecedent rainfall exceeding 120mm.	Predicted/ daily and antecedent rainfall triggers above orange line in Figure 1: rainfall exceeding 70mm in a 24-hour period or 10-day antecedent rainfall exceeding 200mm.
Response	**Road Access**	• Site under appropriate TTM • Enforced no stopping in high hazard areas • Rockfall signage	• Road closure at night (10pm to 7 am) • Alert sent to road users	• Full road closure • Return to Level 1 or 2 once conditions meet reduced level criteria and following assessment and approval by geo-professional.
	Actions	• Not applicable	• Maintenance contractor put on standby. Mobilise road clearing equipment to site. Install overnight road closure. • Geotechnical engineer advised.	• Civil Defence advised. • Maintenance contractor to install closure. • Geotechnical Engineer advised
	Post-Event Assessment & Re-opening of Road	• Not applicable	• Return to Level 1 when all observations return below Level 2 threshold, or after 24 hours if no instability is observed by the Maintenance Contractor or additional rain predicted.	Once trigger rainfall conditions ease below Level 2: • Geotechnical engineer/geologist to inspect site to ascertain the risk of reopening the road, fly UAV if weather permits. • Geotechnical engineer to advise GDC if risk assessment has changed and advise on remediation plan (if required). • GDC to decide on road opening.
Responsibility Plan	**Maintenance Contractor**	• Routine inspections and clearance of drainage ditch. • Document and provide formal records and photographs for each inspection noting areas of instability	• Daily monitoring • Install overnight road closure	• Install road closure
	GDC	• Maintain telemetered rainfall gauge. • Weather reporting • Collect and database Maintenance Contractor inspection records	• Weather forecast monitoring. • Scheduled contact with the Maintenance Contractor and Geotechnical Engineer • Sending alerts and media updates, including advisement of Maintenance Contractor and Geotechnical Engineer	• Constant contact with Civil Defence, the Maintenance Contractor, and Geotechnical Engineer • Notify Regional Management/ National Management / Communications and Engagement Team • Sending closure notice and media updates
	Geotechnical Engineer	• 6 monthly inspections • Update and refine TARP based on rainfall gauge, Maintenance Contractor records, and routine inspection site observations. • Develop georeferenced 3D model of the bluffs	• Prepare to attend site if Level 3 eventuates or at the request of GDC. • Advise the Maintenance Contractor and GDC on alert details. • Reporting to required frequency	• Complete inspections as required. • Advise Maintenance Contractor and GDC on alert details. • Reporting to required frequency

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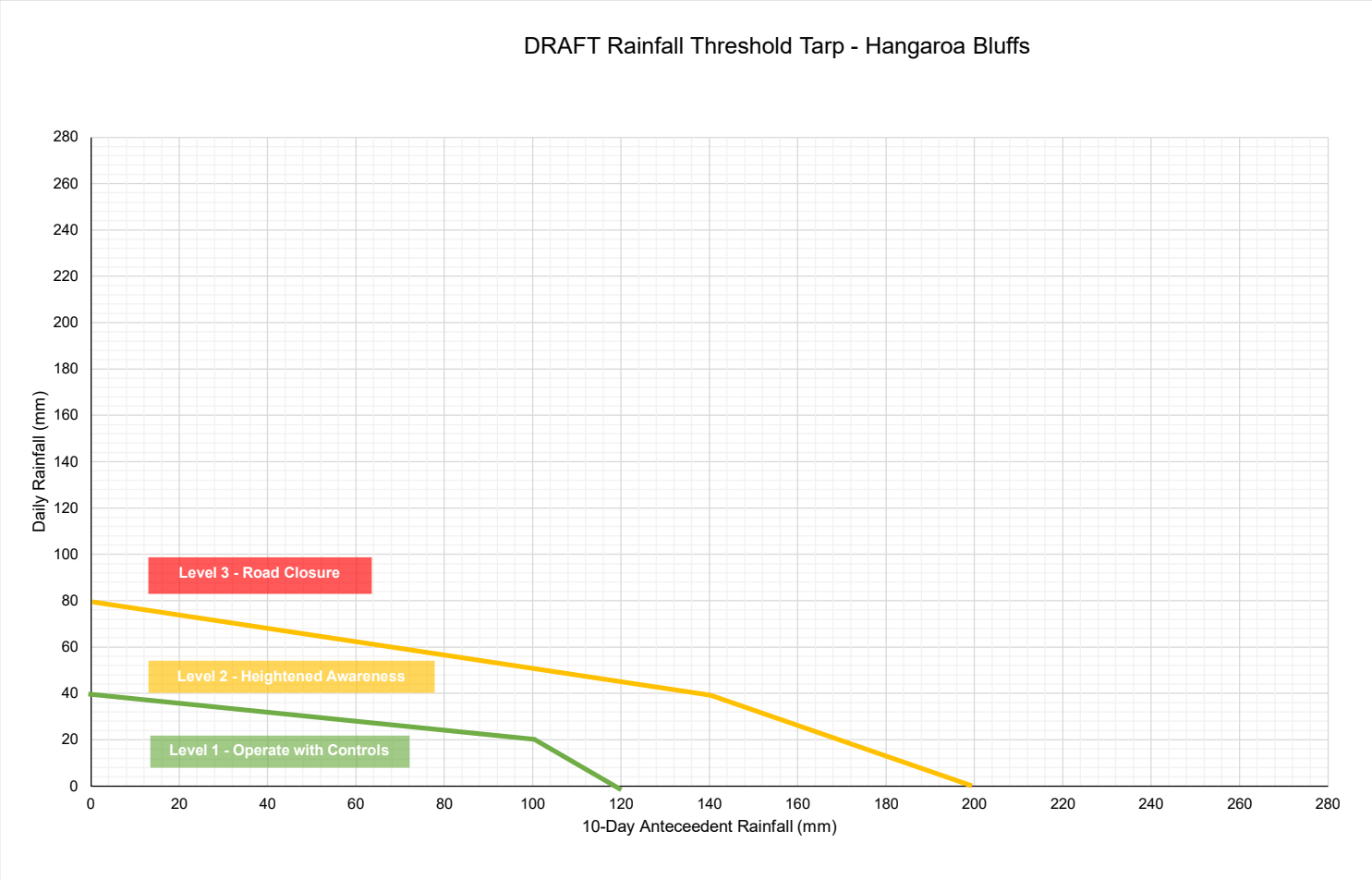

Figure 1: Gisborne regional rainfall TARP rainfall thresholds adopted for Hangaroa Bluffs. Trigger thresholds are derived from regional data and work done by Glade et al. (2000)[1] It is intended that this would be populated with site specific rainfall and instability data. Each data point would indicate whether instability occurred for an event with a given daily vs antecedent rainfall. Instability volumetric magnitude could also be indicated.

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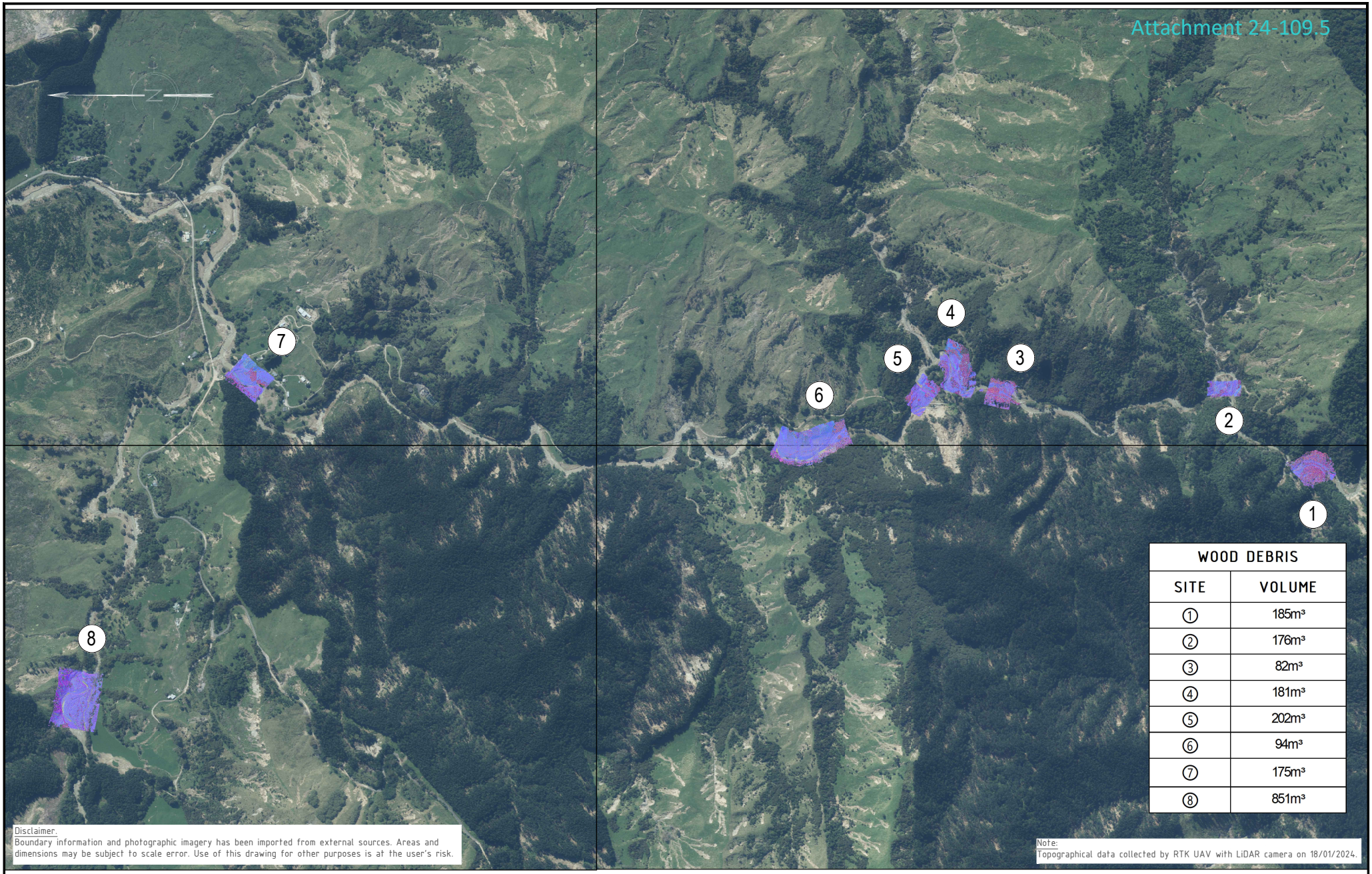


WOOD DEBRIS	
SITE	VOLUME
①	185m³
②	176m³
③	82m³
④	181m³
⑤	202m³
⑥	94m³
⑦	175m³
⑧	851m³

Disclaimer.
Boundary information and photographic imagery has been imported from external sources. Areas and dimensions may be subject to scale error. Use of this drawing for other purposes is at the user's risk.

Note:
Topographical data collected by RTK UAV with LiDAR camera on 18/01/2024.

CPS
Civil Project Solutions
1 Te Maanga Drive
PO Box 460
Gisborne, NZL
Project Management Specialists
0800 [illegible]
www.civilprojects.co.nz

GENERAL NOTES
1. Coordinates in terms of : Poverty Bay Circuit 2000.
2. Elevations in terms of : NZVD 2016.
3. Contour interval is : 0.20m

125m 0 750m
SCALE 1:12500

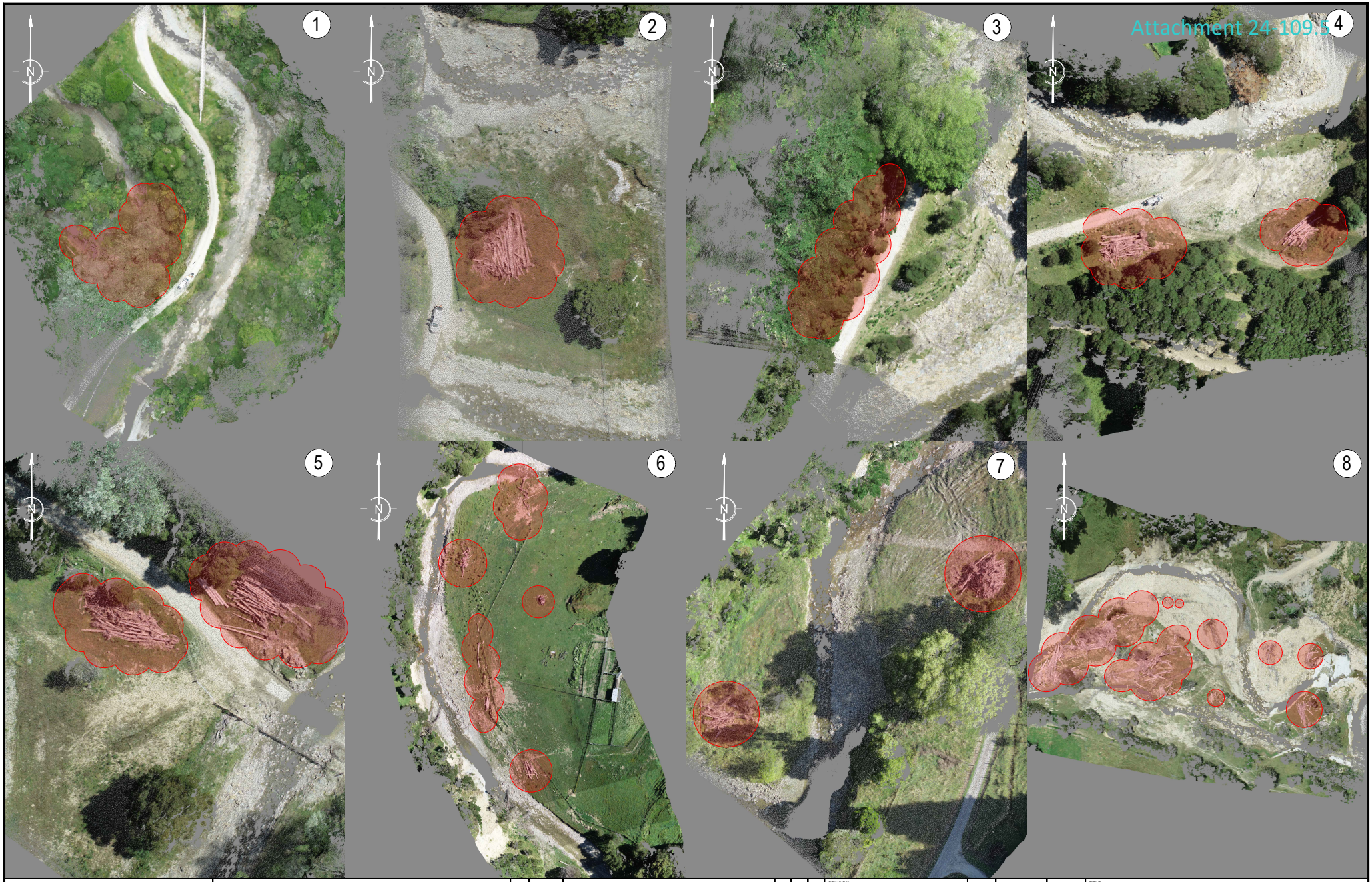
NO | DATE | REVISION | BY | CHK | APP

PRINCIPAL
Te Kaunihera o Te Tairāwhiti
GISBORNE DISTRICT COUNCIL

SURVEYED	A.EASTWOOD	DATE1
DRAWN	P.FLAUGERE	DATE3
CHECKED	P.PIERARD	
APPROVED		
SCALE	1:12500 @A3	
ORIGINAL SIZE	A3	

TITLE
GISBORNE DISTRICT COUNCIL
MAKARIA - WOOD DEBRIS - QUANTITY
UAV LIDAR SURVEY - SITE LOCATIONS

DRAWING No J2356-01-001
REVISION 0



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NO	DATE	REVISION	BY	CHK	APP

PRINCIPAL
Te Kaunihera o Te Tairāwhiti
GISBORNE DISTRICT COUNCIL

SURVEYED	A.EASTWOOD	DATE1	
DRAWN	P.FLAUGERE	DATE3	
CHECKED	P.PIERARD		
APPROVED			
SCALE	N.T.S @A3	ORIGINAL SIZE	A3

TITLE
GISBORNE DISTRICT COUNCIL
MAKARIA - WOOD DEBRIS - QUANTITY
UAV LIDAR SURVEY

DRAWING No J2356-01-002

REVISION 0

GISBORNE DISTRICT COUNCIL

INVESTMENT (Emergency Works) AUDIT

CLOSE OUT MEETING

WAKA KOTAHI NZ TRANSPORT AGENCY

Table of Contents

The purpose of these notes is for discussion at the close out meeting and should not be considered to be the ‘Audit Report’.

Background

- Weather events in January, and February 2023 impacted the transport network triggering immediate initial response.
- To assist with the initial response, Waka Kotahi Board approved a time limited special Funding Assistance Rate (FAR) of normal FAR plus 40%, to a maximum of 100% for Gisborne District Council.
- At that time: the Special FAR was only applicable to initial response activity and only for the period until 30 June 2023. This period was later extended to allow expenditure to be carried over into the 2023/24 financial year.

Purpose

- The purpose of this review is to provide assurance that claims made by GDC under the Special FAR emergency works category were eligible for funding assistance.
- This review focused on the eligibility of claims made for funding assistance under this activity for the 2022/23 and 2024 year to date.
- Subsequent technical audits will be undertaken at a later date as required.

What we did

- We discussed how the NIWE allocation fund was managed.
- We compared funding approved for GDC response activity against the actual claims made to Waka Kotahi for funding assistance.

EW Cyclone Gabrielle 2022/23

- Claimed $48,853,642
- Allocated $54,338,000

EW Cyclone Gabrielle 2023/24

- Claimed $19,449,178 EW + $13,414,163 claimed under Minor Events W/C 140
- We reconciled Councils EW spend to the general ledger
- We requested a transaction list of all items claimed against the 140 Minor works and 141 Emergency works category related to Cyclone Gabrielle and other region North Island Weather Events expenditure.
- We selected a sample of transactions (Physical Works and Professional Services) and traced these back to the source documents to verify funding eligibility.
- We selected a sample of response activities through RAMM dispatch data recorded against the events.
- We established how physical works were procured and the value of the work performed by each supplier including contractors utilised for the Cyclone Gabrielle event.

What we found

- EW Claims were reconciled across the financial years up to 30th June 23 and EW/MW up to October 2024.
- Not all transactions that we sampled were eligible for EW funding assistance. i.e. an invoice to Cleanrite Services & Maintenance was miscoded to EW, when should have been on the original projects code. The Project was Peel St/Palmerston St Ns Peel St/Gladstone roundabout.
- All RAMM data tested was complete e.g. Site photos geo-tagged and descriptions of work carried out.
- However, we found a small number of discrepancies where work carried out would not be classed as initial response, but BAU works. i.e Turanga Road Maintenance Darwin Drive Rd- Culvert Inadequate – Replace Managaoporo Rd Surface Water Channels SW - Unlined - Isolated Blockage.
- This stems from the fact that there are no separate dispatch IDs for EW events with BAU work done on the same dispatch ID. We understand further work on managing the RAMM database is underway, and we recommend that this is a good opportunity to implement this change.
- 10 b grade 20 foot containers were purchased with EW funds, They were to be used as bridges, however even when strengthened they would not be able to take much weight and would be a risk as it wouldn't survive a 1 in 2-year flood, especially with the water flow and slash.
- We noted Council had the opportunity to buy two trucks of metal just after the Cyclone, they took up the opportunity. Council are running stock control on them. Any outstanding metal will be used for new bridge tenders. In the price schedules Council will supply this product so will not be charged for it or cartage of it.
- Council need to be mindful that W/C 140 states that 'any activities that would otherwise qualify as emergency works except that the total cost of the works is less than $100,000 per event per approved organisation or Waka Kotahi NZ Transport Agency (for its own activities) region' qualifies for W/C 140 funding. Council need to supply the requested information to their Investment Advisor. Also, note the difference in FAR from Minor Works to EW activities.

Next Steps

1) The draft *should* be with Gisborne District Council in three to four weeks.
2) Gisborne District Council will be asked to read and reply with comments within three weeks of receiving the draft.
3) A final report will be issued to the CEO of Gisborne District Council. A copy will be sent to your Investment Advisor as well.

Thank you

for the assistance during the audit.

Tony Pinn and Ben Roddis